Chapter 2

ALTERNATIVES

ALTERNATIVE DEVELOPMENT

Alternatives for the 2004 Forest Plan were developed in a four-phase, cooperative effort by the public and Daniel Boone National Forest staff as summarized in Chapter 1 and detailed in Appendix A.

In Phase One, differing approaches, or themes, for addressing the Significant Issues were developed. From an initial set of seven themes, the Management Team selected five that it found to be most appropriate and feasible. This set of five themes was presented to the public during a workshop on August 15, 1998.

At the beginning of Phase Two, these themes were posted on the Forest's web site, mailed to interested parties, and summarized in the Forest's planning newsletter, The Boone Planner. A series of public workshops to gather additional public input and further refine the themes was conducted in November and December 2001. The public was also asked to comment on any road issues as well as provide input for drawing up Desired Future Conditions, Goals, Objectives, and Standards.

In Phase Three, the preliminary locations of Prescription Areas were portrayed on maps that also described management emphases and Desired Future Conditions.

An additional Alternative was developed and existing ones modified in Phase Four. With the Alternatives now numbering six, each was examined in greater detail for inclusion in this Final Environmental Impact Statement (FEIS). A description of the Desired Future Condition (DFC) for each Alternative, along with maps showing land allocations (Prescription Areas) is included in the explanation of each Alternative.

Direction Common to All Alternatives

A Forest Plan and, indeed, all National Forest management activity must conform to established public policy expressed in federal statutes and administrative directives as well as applicable state laws and regulations. In addition, local Forests in consultation with the public may commit to priorities that will guide all other decisions. Some common themes, therefore, will be found in each Alternative of the 2004 Forest Plan. Every Alternative will:

- Seek to maintain the viability of all plant and animal species that occur on National Forest System lands
- Protect and manage threatened and endangered species according to recovery plans
- Meet state water quality requirements
- Protect significant heritage resources

- Develop Best Management Practices (BMPs) to limit pollution from non-point sources
- Retain all specially designated areas, such as Wild and Scenic Rivers, Wilderness areas, Geologic and Scenic areas, from the 1985 Plan.

Management Areas

The DBNF is divided into four Management Areas (MA) based on the main watersheds on the Forest. These are:

- The Licking River Management Area
- The Middle Kentucky River Management Area
- The Upper Kentucky River Management Area
- The Upper Cumberland River Management Area

These areas differ physiographically and biologically as well as hydrologically.

Prescription Areas

A Prescription Area is an allocation of one or more parcels of land within which resource conditions and corresponding management emphasis are similar. Some Prescription Areas describe previous designations; others address current issues and new management emphases. A discussion of Prescription Areas is contained in Appendix F.

Table 2 - 7 compares the Prescription Area acreage for all six Alternatives.

ALTERNATIVES CONSIDERED BUT ELIMINATED

Possible Alternative themes were outlined in the Notice of Intent published in the Federal Register in June 1996. These themes illustrated the range of Alternatives that could be considered in response to the Significant Issues. These themes were modified based upon public comments. The revised themes were then presented to the public at a workshop in August 1998. Using public comments recorded up to that point, the themes were developed into Alternatives. The following Alternatives were developed but eliminated from detailed study.

ALTERNATIVE B

Alternative B was developed from public input requesting that no management take place on the Forest. Under this Alternative there would be no human intervention in natural processes. Public facilities would be closed. Recreation, off-road vehicle use, and development of federally owned minerals on the Forest would cease. Comments made at the August 1998 public workshop as well as letters received during the comment period recommended changes in Alternative B that that led to the formation of Alternative B-1.

The management prescriptions applicable to Alternative B were allocated and mapped, and some preliminary estimates of the impacts of this Alternative were made. After considering this preliminary information, it was determined that Alternative B did not warrant further evaluation because:

- This alternative could not meet all the legal requirements of the National Forest Management Act of 1976 (NFMA), the Multiple-Use Sustained-Yield Act of 1960 (MUSYA) and the Endangered Species Act of 1973 (ESA).
- Other alternatives are being considered in detail, which provide for relatively low levels of management activities.

Alternative B is equivalent to the Minimum Level Benchmark, which is "the minimum level of management which would be needed to maintain and protect the unit as part of the National Forest System together with associated costs and benefits" [36 CFR 219.12(e)(1)(i)]. For this alternative, there would be no associated vegetation management costs, revenues, or outputs as shown in the Spectrum tables in Appendix B.

There is a considerable debate about what is needed to meet the legal requirement to "maintain viable populations of existing native and desired non-native vertebrate species in the planning area" (36 CFR 219.19). There are a number of species that depend on ecological communities that can be maintained only by frequent levels of disturbance. As is explained in Chapter 3 of this DEIS, the Forest Service contends that a significant level of management is needed (at least over the next 10 to 50 years) to restore and maintain these disturbance-dependant communities. A certain amount of human intervention is needed to bring these communities into desired conditions of composition and structure. Once these conditions are attained, natural disturbances and appropriate prescribed fire levels should maintain these communities. However, the levels of management activities that would be needed over the next 10 to 50 years to create these conditions would be inconsistent with Alternative B's overall goal of "minimal human intervention." If it is argued that such a level of activity is acceptable for this Alternative, then it becomes essentially the same as Alternatives B-1.

To further illustrate the need for a certain level of active management, consider the following from Baker and Hunter (2002) in the Southern Forest Resource Assessment:

> The exact nature and condition of these forests and disturbance regimes (in centuries past) are unknown, but the presence of large grazing herbivores and fire-adapted forest communities suggests that much of this forest land was relatively open and subject to regular disturbances. (p. 92)
>
> Today there are more forested acres in the South than in the early 1900s. These forests, however, are greatly altered from forests encountered by European settlers. The common theme for the last 10,000 years is that forests were managed to meet human needs, including those of Native Americans. (p. 93)
>
> We should recognize, however, that removal of all human disturbances would have profound effects on the region's biota. (p. 93)
>
> To avoid regional population declines and species losses, land managers must have the flexibility to promote active management. This region's biota does not thrive in a static system, and intentional neglect does nothing but promote additional extinctions and endangerment to species at risk. This flexibility should not extend to the other extreme of promoting intensive forestry for wildlife conservation, but it does suggest that some level of active management will be necessary to maintain many still extant but imperiled species, including many found on present or set-aside lands. (p. 93)

Also, one emphasis of the Forest Service's "Healthy Forests Initiative," is to reduce the fuel overloads that render forests vulnerable to severe wildland fires. Additionally, minimizing human intervention would increase the Forest's susceptibility to insect and disease outbreaks, which would create increased fuel-loading problems as well as increase risks to other resources and to adjacent private lands. Alternative B would not address these problems and areas of concern.

Apart from the low levels of human intervention, the other aspects of Alternative B, such as large acreages in old-growth or late-successional conditions, maintaining roadless area characteristics, and providing for an emphasis on dispersed recreation activities, etc., are similarly represented in Alternative B-1.

Lastly, while Alternative B would address many issues, it does not address other management issues raised by the public. A minimal human intervention approach to vegetation management would not address "Forest Health," which has been identified as an issue of public concern. The need to manage wildlife habitats that are dependant upon a certain level of disturbance would not be addressed. Alternative B also would not address the issue of demand for various forest products, such as high-quality sawtimber, which are of limited supply from private lands, but are available from National Forest System lands.

In view of these factors, the planning team recommended that further study of Alternative B could not be justified.

ALTERNATIVE E

Alternative E was originally developed to yield maximum return to the federal treasury from the production of timber and minerals. During the November-December 2001 public involvement period the only comments regarding this Alternative were those stating it did not fulfill the multiple-use mission of the Forest Service. Alternative E was then dropped and replaced with Alternative E-1 that offers a more balanced approach to Forest management by changing the emphasis from monetary returns to returns in quality and quantity of goods and services.

ALTERNATIVES CONSIDERED IN DETAIL

Six Alternatives are considered in detail in this Draft Environmental Impact Statement. Not all Prescription Areas are found in each Alternative. Acreage allotted to a Prescription Area may also vary from one Alternative to another. Because Prescription Areas may overlap, the sum of Prescription Area acres will not equal the total acres of National Forest System land.

Alternative A represents a continuation of the 1985 Plan, which did not use Prescription Areas. Areas of emphasis under the 1985 Plan were labeled "management areas," and often correspond to Prescription Areas in the 2004 Forest Plan. In tables that compare Alternatives by Prescription Areas, the former "management areas" of the 1985 Plan are listed as Prescription Areas in Alternative A.

Alternative C-1 is the recommended Alternative for the 2004 Forest Plan.

ALTERNATIVE A -- DESCRIPTION

The 1985 Plan, as currently amended, would continue to be implemented. This present management direction will serve as a basis of comparison among Alternatives. Consideration of this theme is required by the implementing regulations of the National Environmental Policy Act (NEPA). Table 2 - 1 shows how Prescription Area under Alternative A would allocate acres.

Table 2 - 1. Prescription Area allocations, in acres, for Alternative A.

PRESCRIPTION AREAS	ACRES
1.A. Research Natural Areas	658
1.C. Cliffline Community	111,205
1.E. Riparian Corridor	0
1.G. Rare Community	0
1.I. Designated Old-Growth	0
1.J. Significant Bat Caves	6,115
1.K. Habitat Diversity Emphasis	0
1.M. Custodial Area	0
2.A. Clifty Wilderness	12,646
2.B. Beaver Creek Wilderness	4,791
3.A. Developed Recreation	3,700
3.B. Large Reservoirs	30,673
3.C.1. Red River National Wild and Scenic River: Wild River Segment	683
3.C.2. Proposed Wild and Scenic River: Marsh Creek- Wild River	1,244
3.C.3. Red River National Wild and Scenic River: Recreational River Segment	1,440
3.C.4. Proposed Wild and Scenic River: Cumberland River, War Fork Creek, Rockcastle River - Scenic Rivers	5,622
3.C.5. Proposed Wild and Scenic River: Rock Creek and Marsh Creek -Recreational Rivers	6,184
3.E. Red River Gorge Geological Area	29,298
3.F. Natural Arch Scenic Area	1,065
3.H.1. Ruffed Grouse Emphasis	10,535
4.A. Timber Production Emphasis	0
4.B. General Forest Area (1985 Plan)	568,206
5.A. Communications Site	20
5.C. Source Water Protection	0

ALTERNATIVE B-1 -- DESCRIPTION

The natural interactions of organisms with each other and with their environment (ecological processes) would continue with a minimum of direct human influence. Characteristics of the Forest environment would be affected primarily by natural disturbances such as insects, disease, lightning-caused fire, and weather. These characteristics include the different groupings of plants by size, age, and species (vegetation structure), and the variety of plants and animals. Existing recreation facilities would continue to be managed and some additional primitive types of recreational opportunities would be created. No off-road vehicle trails or facilities would be provided. Primary management activities under this Alternative would be visitor safety, law enforcement, and other custodial tasks. Legal requirements such as maintaining the viability of native and desirable non-native species and the protection of PETS species would be fulfilled. Table 2 - 2 shows how Prescription Area under Alternative B-1 would allocate acres.

Table 2 - 2. Prescription Area allocations, in acres, for Alternative B-1.

PRESCRIPTION AREAS	ACRES
1.A. Research Natural Areas	658
1.C. Cliffline Community	111,205
1.E. Riparian Corridor	155,379
1.G. Rare Community	1,200
1.I. Designated Old-Growth	0
1.J. Significant Bat Caves	6,115
1.K. Habitat Diversity Emphasis	0
1.M. Custodial Area	394,163
2.A. Clifty Wilderness	12,646
2.B. Beaver Creek Wilderness	4,791
2.C. Wilderness Study Area	2,834
3.A. Developed Recreation	3,700
3.B. Large Reservoirs	30,673
3.C.1. Red River National Wild and Scenic River: Wild River Segment	683
3.C.2. Proposed Wild and Scenic River: Marsh Creek-Wild River	1,244
3.C.3. Red River National Wild and Scenic River: Recreational River Segment	1,440
3.C.4. Proposed Wild and Scenic River: Cumberland River, War Fork Creek, Rockcastle River - Scenic Rivers	5,622
3.C.5. Proposed Wild and Scenic River: Rock Creek and Marsh Creek - Recreational Rivers	6,184
3.E. Red River Gorge Geological Area and National Natural Landmark (Without Clifty Wilderness Prescription Area)	16,042
3.F. Natural Arch Scenic Area	1,065
3.H.1. Ruffed Grouse Emphasis	0
4.A. Timber Production Emphasis	0
4.B. General Forest Area (1985 Plan)	0
5.A. Communications Site	20
5.C. Source Water Protection	34,015

ALTERNATIVE C -- DESCRIPTION

This Alternative would emphasize the maintenance and restoration of ecological processes and functions while providing for multiple public benefits. Human activity would influence ecological processes to attain and sustain a high diversity of habitat and species. Legal requirements such as maintaining the viability of native and desirable non-native species and the protection of PETS species would be met and habitats enhanced. These species require a variety of habitats that would also provide a variety of activities, experiences, and products for humans. Other Forest products would be provided to the extent possible after meeting ecosystem needs. Table 2 - 3 shows Prescription Area acreage allocations under Alternative C.

Table 2 - 3. Prescription Area allocations, in acres, for Alternative C.

PRESCRIPTION AREAS	ACRES
1.A. Research Natural Areas	658
1.C. Cliffline Community	111,205
1.E. Riparian Corridor	155,379
1.G. Rare Community	1,200
1.I. Designated Old-Growth	15,300
1.J. Significant Bat Caves	6,115
1.K. Habitat Diversity Emphasis	386,577
1.M. Custodial Area	0
2.A. Clifty Wilderness	12,646
2.B. Beaver Creek Wilderness	4,791
3.A. Developed Recreation	3,700
3.B. Large Reservoirs	30,673
3.C.1. Red River National Wild and Scenic River: Wild River Segment	683
3.C.2. Proposed Wild and Scenic River: Marsh Creek-Wild River	1,244
3.C.3. Red River National Wild and Scenic River: Recreational River Segment	1,440
3.C.4. Proposed Wild and Scenic River: Cumberland River, War Fork Creek, Rockcastle River - Scenic Rivers	5,622
3.C.5. Proposed Wild and Scenic River: Rock Creek and Marsh Creek - Recreational Rivers	6,184
3.E. Red River Gorge Geological Area and National Natural Landmark (Without Clifty Wilderness Prescription Area)	16,042
3.F. Natural Arch Scenic Area	1,065
3.H.1. Ruffed Grouse Emphasis	0
4.A. Timber Production Emphasis	0
4.B. General Forest Area (1985 Plan)	0
5.A. Communications Site	20
5.C. Source Water Protection	34,015

ALTERNATIVE C-1 – DESCRIPTION (PREFERRED ALTERNATIVE)

This Alternative would emphasize the maintenance and restoration of ecological processes and functions while providing for multiple public benefits with added emphasis on recreation. Human activity would influence ecological processes to attain and sustain a high diversity of habitats and species. Legal requirements such as maintaining the viability of native and desirable non-native species and the protection of PETS species would be met and habitats enhanced. These species require a variety of habitats, which would also provide a variety of activities, experiences, and products for humans. Some recreational opportunities would be increased. A variety of outdoor recreation activities would be allowed as long as controlled to protect ecosystems. Other Forest products would be provided to the extent possible after ecosystem and recreation needs were met. Table 2 - 4 shows Prescription Area acreage allocations under Alternative C-1.

Table 2 - 4. Prescription Area allocations, in acres, for Alternative C-1.

PRESCRIPTION AREAS	ACRES
1.A. Research Natural Areas	658
1.C. Cliffline Community	111,205
1.E. Riparian Corridor	155,379
1.G. Rare Community	1,200
1.I. Designated Old-Growth	15,300
1.J. Significant Bat Caves	6,115
1.K. Habitat Diversity Emphasis	375,891
1.M. Custodial Area	0
2.A. Clifty Wilderness	12,646
2.B. Beaver Creek Wilderness	4,791
3.A. Developed Recreation	3,700
3.B. Large Reservoirs	30,673
3.C.1. Red River National Wild and Scenic River: Wild River Segment	683
3.C.2. Proposed Wild and Scenic River: Marsh Creek- Wild River	1,244
3.C.3. Red River National Wild and Scenic River: Recreational River Segment	1,440
3.C.4. Proposed Wild and Scenic River: Cumberland River, War Fork Creek, Rockcastle River - Scenic Rivers	5,622
3.C.5. Proposed Wild and Scenic River: Rock Creek and Marsh Creek -Recreational Rivers	6,184
3.E. Red River Gorge Geological Area and National Natural Landmark (Without Clifty Wilderness Prescription Area)	16,042
3.F. Natural Arch Scenic Area	1,065
3.H.1. Ruffed Grouse Emphasis	10,535
4.A. Timber Production Emphasis	0
4.B. General Forest Area (1985 Plan)	0
5.A. Communications Site	20
5.C. Source Water Protection	34,015

ALTERNATIVE D -- DESCRIPTION

This Alternative would emphasize recreational opportunities to the extent possible. Recreation activities would likely influence ecological processes. Legal requirements such as maintaining the viability of native and desirable non-native species and the protection of PETS species would be met and habitats enhanced. Other Forest products would be provided to the extent possible after meeting recreation needs. Table 2 - 5 shows Prescription Area acreage allocations under Alternative D.

Table 2 - 5. Prescription Areas allocations, in acres, for Alternative D.

PRESCRIPTION AREAS	ACRES
1.A. Research Natural Areas	658
1.C. Cliffline Community	111,205
1.E. Riparian Corridor	155,379
1.G. Rare Community	1,200
1.I. Designated Old-Growth	15,300
1.J. Significant Bat Caves	6,115
1.K. Habitat Diversity Emphasis	375,891
1.M. Custodial Area	0
2.A. Clifty Wilderness	12,646
2.B. Beaver Creek Wilderness	4,791
3.A. Developed Recreation	3,700
3.B. Large Reservoirs	30,673
3.C.1. Red River National Wild and Scenic River: Wild River Segment	683
3.C.2. Proposed Wild and Scenic River: Marsh Creek- Wild River	1,244
3.C.3. Red River National Wild and Scenic River: Recreational River Segment	1,440
3.C.4. Proposed Wild and Scenic River: Cumberland River, War Fork Creek, Rockcastle River - Scenic Rivers	5,622
3.C.5. Proposed Wild and Scenic River: Rock Creek and Marsh Creek -Recreational Rivers	6,184
3.E. Red River Gorge Geological Area and National Natural Landmark (Without Clifty Wilderness Prescription Area)	16,042
3.F. Natural Arch Scenic Area	1,065
3.H.1. Ruffed Grouse Emphasis	10,535
4.A. Timber Production Emphasis	0
4.B. General Forest Area (1985 Plan)	0
5.A. Communications Site	20
5.C. Source Water Protection	34,015

ALTERNATIVE E-1 -- DESCRIPTION

This Alternative would emphasize the quality as well as the quantity of resource products to maximize benefits to local and regional communities. Ecological processes would be directly influenced to increase the yield of Forest products. Development and utilization would be managed to ensure that production could be sustained. Product extraction, and other uses such as recreation, would likely influence ecological processes. Legal requirements such as maintaining the viability of native and desirable non-native species and the protection of PETS species would be met. Table 2 - 6 shows Prescription Area acreage allocations under Alternative E-1.

Table 2 - 6. Prescription Area allocations, in acres, for Alternative E-1.

PRESCRIPTION AREAS	ACRES
1.A. Research Natural Areas	658
1.C. Cliffline Community	111,205
1.E. Riparian Corridor	155,379
1.G. Rare Community	1,200
1.I. Designated Old-Growth	325
1.J. Significant Bat Caves	6,115
1.K. Habitat Diversity Emphasis	0
1.M. Custodial Area	0
2.A. Clifty Wilderness	12,646
2.B. Beaver Creek Wilderness	4,791
3.A. Developed Recreation	3,700
3.B. Large Reservoirs	30,673
3.C.1. Red River National Wild and Scenic River: Wild River Segment	683
3.C.2. Proposed Wild and Scenic River: Marsh Creek - Wild River	1,244
3.C.3. Red River National Wild and Scenic River: Recreational River Segment	1,440
3.C.4. Proposed Wild and Scenic River: Cumberland River, War Fork Creek, Rockcastle River - Scenic Rivers	5,622
3.C.5. Proposed Wild and Scenic River: Rock Creek and Marsh Creek - Recreational Rivers	6,184
3.E. Red River Gorge Geological Area and National Natural Landmark (Without Clifty Wilderness Prescription Area)	16,042
3.F. Natural Arch Scenic Area	1,065
3.H.1. Ruffed Grouse Emphasis	0
4.A. Timber Production Emphasis	396,697
4.B. General Forest Area (1985 Plan)	0
5.A. Communications Site	20
5.C. Source Water Protection	34,015

COMPARISON OF ALTERNATIVES

Differences among Alternatives become more concrete when variations in the size, type, and locations of Prescription Areas are compared along with budget allocations. Table 2 - 7 compares the acreage assigned to each Prescription Area by the various Alternatives.

No variation occurs for some Prescription Areas regardless of Alternative, especially those that reflect a common management direction, such as the recovery of PETS species. For example, the 1.J Significant Bat Caves Prescription Area remains constant in every Alternative, indicating the priority given to the protection and recovery of such species as the Indiana bat and the Virginia big-eared bat. The same holds true for the 1.C Cliffline Community.

None of the Alternatives alter the existing acreage for 3.A Developed Recreation, or 3.B Large Reservoirs, as no expanded facilities of this type are proposed. A new Prescription Area, 5.B Source Water Protection Area, remains constant in all of the new Alternatives. The 3.H.2 Ruffed Grouse Emphasis Prescription Area would be retained only in two of the new Alternatives, C-1 and D, that give greater emphasis to recreation.

Existing or proposed acreage for Congressional designation, of Wild and Scenic Rivers, is constant across all Alternatives. Wolfpen Inventoried Roadless area is protected as a roadless area as an objective in the Red River Gorge Prescription area in all alternatives. The Wolfpen Inventoried Roadless area is proposed as a Wilderness study area in alternative B-1.

The 1.K Habitat Diversity Prescription Area was not included in the 1985 Plan, represented by Alternative A. (The most nearly comparable management emphasis in Alternative A is known as General Forest.) The Habitat Diversity Prescription Area also is not found in Alternative E-1, which places primary emphasis on the production of minerals, timber, and other forest products. The Habitat Diversity Prescription Area would cover nearly half of the Forest's 700,000 acres in Alternatives C, C-1, and D, reflecting their emphasis on the emerging concept of ecosystem management.

Alternative B-1 would take a more "hands off" approach to Forest management, making human intervention to promote habitat diversity inappropriate. Accordingly, Alternative B-1 is the only Alternative to contain the 1.M Custodial Prescription Area, which at 394,163 acres is larger than Habitat Diversity Prescription Area in some other alternatives.

An old-growth dimension to diversity is evident in the three Alternatives that also contain the Habitat Diversity Prescription Area. Alternatives C, C-1, and D allocate 15,203 acres for 1.I Designated Old-Growth, including the "old-growth" that occurs in the Riparian Corridor and Cliffline Community Prescription Areas. A smaller, but important, allocation for old-growth would be created in Alternative E-1, the production oriented Alternative. The 4.A Timber Production Emphasis Prescription Area appears only in Alternative E-1, the lone Alternative that gives highest priority to production of goods and services.

The 4.B General Forest Prescription Area, which was applied to 568,206 acres of the Forest by the 1985 Plan, Alternative A, would not be carried over by any of the new Alternatives.

Table 2 - 7. Comparison of Prescription Area Acreage, by Alternative.

PRESCRIPTION AREA	Alt. A[1]	Alt. B-1	Alt. C	Alt. C-1	Alt. D	Alt. E-1
1.A. Research Natural Area[2]	189 / 469	189 / 469	189 / 469	189 / 469	189 / 469	189 / 469
1.C. Cliffline Community	111,205	111,205	111,205	111,205	111,205	111,205
1.E. Riparian Corridor	0	155,379	155,379	155,379	155,379	155,379
1.G. Rare Community[3]	0	1,200	1,200	1,200	1,200	1,200
1.I. Designated Old-Growth / Without Riparian Corridor and Cliffline Community Prescription Areas)	0	0	15,300/ 10,420	15,300/ 10,420	15,300/ 10,420	325/ 300
1.J. Significant Bat Caves	6,115	6,115	6,115	6,115	6,115	6,115
1.K. Habitat Diversity Emphasis	0	0	386,577	375,891	375,891	0
1.M. Custodial Area	0	394,163	0	0	0	0
2.A. Clifty Wilderness	12,646	12,646	12,646	12,646	12,646	12,646
2.B. Beaver Creek Wilderness	4,791	4,791	4,791	4,791	4,791	4,791
2.C. Wilderness Study Area		2,834				
3.A. Developed Recreation[4]	3,700	3,700	3,700	3,700	3,700	3,700
3.B. Large Reservoirs	30,673	30,673	30,673	30,673	30,673	30,673
3.C.1. Red River National W&S River: Wild River Segment	683	683	683	683	683	683
3.C.2. Proposed W&S River: Marsh Creek-Wild River	1,244	1,244	1,244	1,244	1,244	1,244
3.C.3.Red River National W&S River: Recreational River Segment	1,440	1,440	1,440	1,440	1,440	1,440
3.C.4.Proposed W&S River: Cumberland River, War Fork Creek, Rockcastle River- Scenic Rivers	5,622	5,622	5,622	5,622	5,622	5,622
3.C.5.Proposed W&S River: Rock Creek and Marsh Creek Recreational Rivers	6,184	6,184	6,184	6,184	6,184	6,184
3.E. Red River Gorge Geological Area[5] (Without Wilderness / Total Area)	16,042/ 29,298	16,042/ 29,298	16,042/ 29,298	16,042/ 29,298	16,042/ 29,298	16,042/ 29,298
3.F. Natural Arch Scenic Area	1,065	1,065	1,065	1,065	1,065	1,065
3.H.2. Ruffed Grouse Emphasis	10,535	0	0	10,535	10,535	0
4.A. Timber Production Emphasis	0	0	0	0	0	396,697
4.B. General Forest Area (1985 Plan)	568,206	0	0	0	0	0
5.A. Communications Sites	20	20	20	20	20	20
5.C. Source Water Protection[6]	0	34,015	34,015	34,015	34,015	34,015
Total DBNF Lands[7]	693,728	693,728	693,728	693,728	693,728	693,728

[1]Alternative A is the 1985 Plan. The 1985 Plan did not use Prescription Areas. Some of the proposed Prescription Areas were labeled "management areas" in the 1985 Plan. The remaining prescription areas shown in table above represent areas identified in the 1985 Plan for special management. Alternative C-1 is the preferred Alternative for the 2004 Forest Plan. Acres are from geographical information system (GIS) mapping unless otherwise noted.

[2]1.A. 189 acres in the existing Rock Creek RNA; 469 acres in proposed Elisha Branch and Tight Hollow RNAs.

[3]1.G. Rare Community Estimate of 1,200 acres not in GIS.

[4]3.A. Acres obtained from INFRA database.

[5]3.E. Red River Gorge Prescription Area does not include Clifty Wilderness.

[6]5.B. Source Water Protection Zone 1 and Zone 2.

[7]Total National Forest System land in GIS system. Acres do not sum to these numbers because some Prescription Areas overlap.

Comparison of Alternatives by Issue

ISSUE 1 – FRAGMENTATION

Fragmentation is any process that serves to disrupt, convert, or isolate habitat. In a forest context, fragmentation can occur across a range of landscape patterns. At one extreme, it is represented by small disturbance patches that disrupt habitat continuity. At the other extreme, widespread habitat conversion reduces remnants of the original habitat into isolated patches.

Forest Fragmentation

Development of forested land is the primary cause of forest fragmentation. The mixture of plant and animal species in an area is influenced by the amount of forest cover and the arrangement of forested areas in relation to farmland as well as urban and residential land. The forest landscape is considered fragmented if forested tracts are widely separated by other types of land use or where forest provides only a small amount of the total cover. Even a large forested area may become fragmented if expansive tracts of land that once grew trees are converted to non-forest uses such as shopping centers, housing developments, parking lots, or major highways. Forest fragmentation may isolate populations of plants and animals that depend on large tracts of forested land, adversely affecting their sustainability.

Within-Forest Habitat Fragmentation

Changes in forest composition and/or age-class conditions that interrupt or isolate forest habitat is another form of fragmentation. The arrangement of tree species and age structure affects which plant and animal populations may be found in a forested area. Arrangement of forest habitat types across an area and the degree to which they are connected influences habitat suitability. An area where forest habitat types are small or not connected may limit suitability for some species. The implications of habitat fragmentation within the forest depend on the habitat requirements of individual species. Many species thrive in a diverse mixture of habitats while others need a more uniform habitat over a large area.

Within-forest habitat fragmentation is the primary focus of this issue in examining management considerations for each alternative.

In addressing within-forest habitat fragmentation, management activities should strive to:

- Provide interior forest habitat
- Provide habitat continuity/connectivity
- Reduce adverse edge effects created by management activities.

A comparison of forest parameters relative to within forest fragmentation is provided for each alternative in Table 2 - 8.

Table 2 - 8. Management parameters affecting within-forest habitat fragmentation.

MANAGEMENT PARAMETERS*	Alt. A	Alt. B	Alt. C	Alt. C-	Alt. D	Alt. E
Area Suitable for Timber Production** (% N.F. land)	68%	6%	50%	50%	50%	53%
0-10 Age Class per Decade (% N.F. land)	7%	1%	3%	3%	3%	5%
Yellow Pine Restoration (% N.F. land)	5%	5%	6%	6%	6%	5%
Woodland Habitat (% N.F. land)	0%	0%	9%	9%	9%	1%
Grassy Openings and Wooded Grassland/Shrubland (% N.F. land)	<1%	<1%	3%	3%	3%	<1%
Level of Riparian Habitat Continuity	Moderate	Low	Low	Low	Low	Low
Within-forest habitat Fragmentation	**High**	**Low**	**Moderate**	**Moderate**	**Moderate**	**High**

*Management Parameters are based on long-term management objectives and Desired Future Conditions.

**Area Suitable for Timber Production is timberland on which most vegetation manipulation occurs.

While forest management is undertaken to achieve worthwhile goals, management activities can have the side effect of causing habitat fragmentation within the forest. Management activities that introduce a prominent forest edge are most likely to disrupt habitat continuity. Such activities include regeneration harvest, pine restoration, the creation of grassy openings, and the development of wooded grassland/shrubland conditions. Alternatives A and E-1 would introduce the greatest amount of harvest/regeneration edge. Fragmenting effects would persist until new growth attained a high-canopy forest character. Alternatives C, C-1, and D would introduce the greatest amount of forest edge from pine restoration and the development of grassland/shrubland communities.

Development of woodland habitat contributes to forest habitat fragmentation, but to a lesser degree since resulting habitat differences will be less severe. Woodland habitat development would be greatest in Alternatives C, C-1, and D.

Riparian habitat associated with the stream network across the forest helps link high canopy forest structure. Provisions in the Riparian Corridor Prescription Area would help maintain riparian habitat connectivity in all Alternatives except A.

Alternatives A and E-1 would likely create the most fragmentation of forest habitat. This is primarily due to a relatively high level of habitat discontinuity and reduced options for interior forest species. Alternative B-1 would initially result in a generally contiguous forest, but natural processes would eventually cause extensive change across the Forest. Alternatives C, C-1, and D would introduce a moderate level of habitat fragmentation within the Forest while developing and maintaining the diverse habitat essential to support the wide array of species found on the DBNF.

ISSUE 2 – OLD-GROWTH

Old-growth and the aging of Forest in general are discussed throughout this document. However, the old-growth issue is further clarified in Chapter 3 where management emphases are described. The Designated Old-Growth Prescription Area will be managed primarily to promote functional old-growth and corresponding characteristics within all old-growth forest types (Table 2-9). Areas recognized as *future* old-growth (FOG), will tend to promote the development of old-growth characteristics incidentally to the prescribed purpose, or goal, of the prescription area (Table 2-10). Identification of a prescription area as FOG does not imply that primary management will encourage old-growth characteristics across the entire prescription area, or throughout the planning period.

Possible old-growth (POG) stands have been identified as likely to qualify as old-growth based on community type and stand age. These stands may occur in any prescription area across the forest. Management that could alter the stand's potential to qualify as old-growth will not occur until the stand has been inventoried and a determination reached. If the stand is identified as old-growth, analysis then leads to a project level decision as to whether it will be managed as such. Stands managed as old-growth will be included in the 1.I. Designated Old-Growth Prescription Area. Since management of each POG area will be determined site-specifically during Forest Plan implementation, regardless of the alternative chosen, it is not used as an indicator to address the old-growth issue.

In addressing old-growth, the following indicators were used:

- Acres of each old-growth forest type within the Designated Old-Growth Prescription Area.
- Acres of each old-growth forest type within prescription areas recognized as future old-growth.

Table 2 - 9. Old-growth units, by forest type and openings, within the Designated Old-Growth Prescription Area.[1]

Ranger District	Old-growth Unit	Forest Types: Conifer Northern Hardwood	Mixed Mesophytic	River Floodplain Hardwood	Dry-mesic Oak	Dry and Xeric Oak Forest, Woodland, Wooded Grass-and Shrubland	Xeric Pine and Pine-oak Forest and Woodland[2]	Dry and Dry-mesic Oak-pine	Eastern Riverfront	Beech (Totals Included in Mixed Mesophytic)	Total Forested Acreage per Old-growth Unit	Acres of Openings	Total Acreage
Morehead	Yocum Cr.	39	783	29	587	112	43	171	0	0	1,763	143	1,906
	Caney Cr.	0	86	21	1,506	72	189	595	0	0	2,468	85	2,552
Stanton	Cave Hollow	0	293	0	436	0	0	184	0	0	913	0	913
	Claw Tract	0	278	0	48	0	0	0	0	68	325	0	325
London	White Oak Cr.	353	95	0	1,398	93	202	21	0	0	2,162	0	2,162
	Horselick Cr.	6	1,020	51	567	87	223	15	43	56	2,012	5	2,017
Somerset	Straight Cr.	0	381	0	543	0	223	88	0	47	1,235	0	1,235
Stearns	Jellico	0	966	0	783	413	41	0	0	46	2,203	100	2,303
Redbird	Big Double Cr.	47	1,239	108	446	0	0	0	23	589	1,863	55	1,918
	Total	445	5,141	209	6,314	776	920	1,074	66	806	14,944	388	**15,331**

[1]This Prescription Area is found in Alternatives C, C-1, D and E-1, but only the Claw Unit is included in Alternative E-1.

[2]These acres have not been re-evaluated since the southern pine beetle epidemic and theie yellow pine component may be severely diminished.

Table 2 - 10. Acres of future old-growth (FOG) by old-growth forest type.

Alternative	Conifer northern hardwood	Mixed mesophytic	River floodplain hardwood	Dry-mesic oak	Dry and xeric oak forest, woodland, wooded grass-and shrubland	Xeric pine and pine-oak forest and woodland[2]	Dry and dry-mesic oak-pine	Eastern riverfront	Uninventoried acres	Beech (totals included in mixed mesophytic)	Total acreage
A	16,983	35,927	613	49,708	10,266	25,626	13,588	51	2,708	1,331	155,480
B-1[1]	15,892	63,693	2,564	92,776	15,357	36,587	22,688	155	6,645	2,650	(256,357)
	Additional FOG in Alternative B-1 is found in the 344,578-acre Custodial Prescription Area, which has not been analyzed by forest type. The majority of this prescription area is classified as unsuitable for timber production.										530,935
C, C-1, D, and E-1	15,892	63,693	2,564	92,776	15,357	36,587	22,688	155	6,645	2,650	256,357

[1]The suitable acreage, about 70,000 acres, is not included in this table.

[2]These acres have not been re-evaluated following the southern pine beetle epidemic, and may now have a severely diminished yellow pine component.

Table 2 - 11. Acres in Prescription Areas that will tend to move toward aging forests and old-growth conditions.

ALTERNATIVE	Future Old-Growth Prescription Areas	Designated Old-Growth Prescription Area	Total Acreage
A	155,480	0	155,480
B-1[1]	530,935	0	575,578
C, C-1 and D	256,357	15,331	271,688
E-1	256,357	325	256,682

[1]The approximately 70,000 acres in the Custodial Prescription Area that are classified as suitable for timber production are not included in this table.

ISSUE 3 – RARE COMMUNITIES

The Rare Communities section of Chapter 3 addresses rare communities as defined here. Rare communities are difficult to pinpoint and evaluate with complete knowledge of their extent and condition because of their dispersion across the landscape. In some cases inappropriate or lack of appropriate disturbance can obscure their identity. Because of their widespread, isolated locations, the effects of accidental damage from dispersed recreation are difficult to track. Just how budget levels would affect implementation of each Alternative is not easily assessed. Estimates for elements are made instead of using exact numbers.

In addressing rare communities, the following indicators were used:

- Number of acres of rare communities sites and management zones by type
- Likelihood of enhancement of these communities
- Likelihood of unintended damage to communities from dispersed recreation.

Table 2 - 12. Rare community names, known sites, sizes and surrounding area sizes.

COMMUNITY NAME	Number of Known Sites	Acre Estimate	Management Acres	Rarity Type for DBNF
Streamhead Seeps/Bogs	60	5	1000	Distribution/Condition
Slope Seeps	10	5	Included above	Distribution
Swamps	2	4	80	Distribution
Natural Ponds	8	2	80	Distribution/Condition
Limestone Glades	4	2	8	Distribution/Condition
Sandstone Glades	6	15	30 (in Cliff Rx)	Distribution/Condition
Spray Cliffs	6	2	100 (in Cliff Rx)	Distribution
Canebrakes	10	8	16 (in Riparian Rx)	Distribution/Condition
Native Warm-season Grasslands	ca. 30	50	50 (in 1K Rx)	Distribution/Condition
Wet Meadows	1	4	4	Distribution/Condition
Redcedar Glades	ca. 5	80	80 (ca. 50 in Cliff Rx)	Distribution/Condition
Redcedar-grass Woodland	1-2?	20-30	40	Distribution

The values in Table 2 - 12 are expected to remain relatively stable across all Alternatives. Most of these were located during project surveys or indirectly through the Forest's cooperative inventories (USDA Forest Service et al. 1988-1994). Additional rare community sites likely exist on the DBNF. Finding them, however, is often a matter of serendipity. Because it calls for the lowest level of management activity, the discovery of new site would be less likely under Alternative B, but such estimates are problematic.

Table 2 - 13. Rare communities and their level of protection across Alternatives.

Alternatives	B-1	C	C-1	D	E-1	A
Management and Risk Level*	1	5	4	3	2	2

* Management and Risk Level codes:

1 = Moderately high protection, very low level of management action, and moderately low risk of unintended damage from dispersed recreation activities.

2 = Low protection, moderate level of management action, and moderate risk of unintended damage from dispersed recreation activities.

3 = Moderately high protection, moderate level of management action and high risk of unintended damage from dispersed recreation activities.

4 = High protection, high level of management action, and moderately high risk of unintended damage from dispersed recreation activities.

5 = High protection, very high level of management action, and moderate risk of unintended damage from dispersed recreation activities.

Table 2 - 14. Rare communities and the potential for overall benefits to them, displayed by Alternative in order of increasing potential for benefits.

Relative potential for overall benefits to rare communities by Plan Alternatives					
A	E-1	D	B-1	C-1	C

Alternative A (the 1985 Plan) does not contain the specific language needed for Standards nor does it contain the programmatic direction and Desired Future Condition statements for a Rare Community Prescription Area. This Alternative would continue any current site-specific protection or active management of rare communities. While no programmatic direction to protect or manage these areas would be provided, steps would be taken to avoid wet soils and locations of rare species. Where these coincide with rare communities, some protection would be provided. The active management that has occurred in the past to enhance rare community sites also could be expected to continue. However, the accidental or intentional damage to rare communities that may occur during project implementation is best addressed at the site-specific level. Recreation levels would continue near current levels, with the same potential for inadvertent damage as in Alternative C. This Alternative would provides the least overall support of any Alternative for rare communities because it would not specifically recognized or manage them for their resources. While Alternative A could potentially offer more enhancement of rare communities than Alternative B-1, Alternative A is still generally less protective than Alternative B-1.

Alternatives B-1, C, C-1, D, and E-1 would provide for a Rare Community Prescription Area in which management would be directed toward protecting and maintaining in good health a variety of rare communities. Emphasis and available funding would largely determine the type and extent of management for rare communities under any of these Alternatives.

Alternative B-1 would emphasize custodial management. Management actions to enhance species welfare would not be encouraged, and intrusive actions could even be prohibited. The reduction in recreational use likely to occur under this Alternative would also likely result in fewer incidents of

accidental damage. While Alternative B-1 would provide for focused management of rare communities, only minimum protection and minimal required management would occur.

Alternative C would emphasize management action, including public awareness campaigns, designed to maintain or enhance ecosystems, including rare communities. Levels of dispersed recreation would not likely increase over current levels. Direction in this Alternative would provide for focused management of rare communities, offering the greatest likelihood of improved conditions where needed. Alternative C also would not encourage recreation on the Forest above current levels.

Management activities under Alternative C-1 would be based upon and driven by species needs, especially the maintenance of viability. However, a shared emphasis with recreation would likely reduce somewhat the Forest's ability to manage rare communities. The likelihood of negative impacts from dispersed recreation, even with public awareness campaigns, would increase to some extent. Direction in this Alternative would provide for focused management of rare communities with the intent of improving their condition where needed.

Under Alternative D, management emphasis and budget dollars would be targeted toward recreational developments. Dispersed recreation, because it would not undergo second level, site-specific analysis, would have the potential to adversely impact rare communities across the Forest, even with focused management, including public awareness campaigns. Direction in Alternative D would provide for active management of rare communities intended to improve their condition in at least some communities where needed. Recreation use of the Forest would be encouraged at levels above current use, creating the greatest likelihood of inadvertent damage from dispersed recreation.

Alternative E-1 management emphasis would be directed toward maximizing resource utilization to provide goods and services. While site-specific analysis would be undertaken, the cumulative potential for inadvertent negative impacts on rare communities would increase under this Alternative. While Alternative E-1 would call for focused management of rare communities, only minimum levels of protection and intervention would be provided. When economically viable, this Alternative could also encourage recreation on the Forest beyond current levels. The likelihood of inadvertent damage from dispersed recreation would about the same as in Alternative C-1.

ISSUE 4 – PROPOSED, ENDANGERED, THREATENED, AND SENSITIVE SPECIES

In addressing this issue, management activities would strive to:

- Conserve and recover federally proposed, endangered and threatened species
- Maintain the viability of sensitive species and preclude trends toward federal listing

In addressing this issue the following indicators were used:

The establishment of Prescription Areas designed to protect or enhance PETS species habitats

The overall likelihood of moving PET species populations toward recovery and ensuring Sensitive species viability and preclude a trend toward federal listing.

Effects associated with Alternatives are shown by Prescription Area (Table 2 - 15) and functional area (Table 2 - 16). This information is also displayed in the PETS Resource Table section of

Chapter 3. Average ratings were then used to display a range of Alternatives, from the standpoint of PETS species, in the last section of this comparison.

Table 2 - 15. Relative opportunity to benefit PETS species by Prescription Area and Alternative.

PRESCRIPTION AREA	Alt. A	Alt. B-1	Alt. C	Alt. C-1	Alt. D	Alt. E-1
1.C. Cliffline Community	2	2	2	2	2	2
1.E. Riparian Corridor	2	3	3	3	2	3
1.G. Rare Community	N/A	3	3	3	3	3
1.I. Designated Old-Growth	N/A	1	3	3	3	3
1.J. Significant Bat Caves	2	3	3	3	3	3
1.M. Custodial	N/A	1	N/A	N/A	N/A	N/A
1.K. Habitat Diversity Emphasis	N/A	N/A	3	3	3	N/A
2.A&B. Wilderness	2	2	2	2	2	2
3.C. W&S Rivers	2	2	2	2	2	2
3.E. Red River Gorge Geological Area and National Natural Landmark	2	2	2	2	2	2
4.A. Timber Products	N/A	N/A	N/A	N/A	N/A	1
4.B. General Forest Area	2	N/A	N/A	N/A	N/A	N/A
Average Rating	2.0	2.1	2.5	2.5	2.4	2.3

3 = a programmatic increase in PETS species protection or habitat enhancement opportunities

2 = a programmatic no change in PETS species protection or habitat enhancement opportunities

1 = a programmatic decrease in PETS species protection or habitat enhancement opportunities

Table 2 - 16. Relative opportunity to benefit PETS species by functional area and Alternative.

FUNCTIONAL AREA	Alt. A	Alt. B-1	Alt. C	Alt. C-1	Alt. D	Alt. E-1
Recreation	2	3	3	2	1	2
Roads and trails	2	3	3	3	1	1
Fire	2	1	3	3	3	1
Minerals	2	3	3	3	2	1
Land adjustment	2	2	3	3	1	1
Average Rating	2.0	2.4	3.0	2.8	1.6	1.2

1 = a programmatic decrease in PETS species protection or habitat enhancement opportunities

2 = a programmatic no change in PETS species protection or habitat enhancement opportunities

3 = a programmatic increase in PETS species protection or habitat enhancement opportunities

RELATIVE COMPARISON OF FOREST PLAN ALTERNATIVES FOR PETS SPECIES

The ratings for each alternative in the two preceding tables were used to compare their relative overall benefits and impacts to the PETS species resource on the DBNF. From a PETS species standpoint, the range in order of least to most favorable habitat condition is as follows: Alternatives E-1, A and D, B-1, C-1 and C. Rationale for this relative comparison is provided below.

Alternative E-1: Management emphasis would be directed toward maximizing goods and services. The high level of activity associated with this alternative, would likely increase the potential for inadvertent negative impacts.

Alternative A: The 1985 Plan does not contain the specific language needed for Standards nor does it contain the programmatic direction and Desired Future Condition statements for Prescription Areas such as Riparian Corridor and Rare Communities.

Alternative D: Management emphasis and budget dollars would be targeted toward recreational developments. Increased levels of off-trail, dispersed recreation would have the potential for adversely impacting PETS species across the Forest, especially in riparian areas.

Alternative B-1: With the custodial emphasis of this Alternative, management action necessary to maintain habitat diversity and suitability for many species would not be encouraged and generally allowed only at levels necessary to maintain minimum levels of species viability. Uncontrollable events such as weather, disease, and infestations would be more likely to trend species population levels toward federal listing.

Alternative C-1: This Alternative, based upon ecosystem management with some additional emphasis on recreation, would promote the viability of species habitat. Increased recreational use could result in localized impacts to PETS species. However, the potential to develop long-term resource awareness and stewardship values with the public should far outweigh the short-term risks.

Alternative C: Ecosystem management to support species habitat and viability needs would guide management activities. Habitat management activities would be driven by species needs, especially the maintenance of species viability and the enhancement of habitats associated with PETS species.

ISSUE 5 – FISH AND WILDLIFE MANAGEMENT

This issue is addressed in the Demand Species sections of Chapter 3.

Demand Species

Because the Forest Plan provides programmatic rather than site-specific direction, this analysis attempts a general comparison based on expected changes to associated habitat types. It assumes an increase or decrease in habitat quantity will lead to corresponding changes in populations and, in turn, increases or decreases in opportunities for the public to enjoy visits to the Forest. There are limitations to this assumption, however. Populations are affected by many factors, such as hunting/fishing regulations; access; numbers and success of hunters/anglers; supplemental stockings of species; quality and juxtaposition of habitats; climatic conditions; insects and disease; inter and intra specific competition; and land management practices on adjacent lands.

In addressing demand species, the following indicators were used:

Environmental effects of the Alternatives on demand species were based on the number of acres of habitat available for demand species after 10 years and then 20 years of Plan implementation (Table 2 - 17).

Table 2 - 17. Habitat for Demand Species.

Habitat Types Most Commonly Used By Demand Species	Out Year	Amount % Demand Species Habitat	Alt. A	Alt. B-1	Alt. C, C-1, and D	Alt. E-1
Grassy Openings	0	Acres	2,171	2,171	2,171	2,171
		%	0.50%	0.50%	0.50%	0.50%
	10	Acres	2,271	900	2,200	900
		%	0.51%	0.21%	0.50%	0.21%
	20	Acres	2,371	900	2,200	900
		%	0.53%	0.22%	0.50%	0.21%
Wooded Grasslands/Shrublands (Pine)	0	Acres	0	0	0	0
		%	0.00%	0.00%	0.00%	0.00%
	10	Acres	0	110	110	110
		%	0.00%	0.03%	0.03%	0.03%
	20	Acres	0	110	110	110
		%	0.00%	0.03%	0.03%	0.03%
Wooded Grasslands/Shrublands (Hardwood)	0	Acres	0	0	0	0
		%	0.00%	0.00%	0.00%	0.00%
	10	Acres	0	610	660	610
		%	0.00%	0.15%	0.15%	0.14%
	20	Acres	0	640	1,330	640
		%	0.00%	0.15%	0.32%	0.15%
Early Successional 0-10 Years	0	Acres	56,171	56,171	56,171	56,171
		%	13.06%	13.06%	13.06%	13.06%
	10	Acres	50,000	7,720	23,049	37,084
		%	11.28%	1.84%	5.37%	8.51%
	20	Acres	50,000	7,123	22,949	36,395
		%	11.14%	1.77%	5.46%	8.40%
Poles/Sapling 11-50 Years	0	Acres	155,360	155,360	155,360	155,360
		%	36.12%	36.12%	36.12%	36.12%
	10	Acres	185,941	185,941	185,941	185,941
		%	41.96%	44.26%	43.32%	42.68%
	20	Acres	196,360	153,360	168,640	182,724
		%	43.77%	38.14%	40.13%	42.18%
Mast/Den Produces 51-200 Years	0	Acres	212,421	212,421	212,421	212,421
		%	49.39%	49.39%	49.39%	49.39%
	10	Acres	200,893	220,807	213,587	206,976
		%	45.34%	52.56%	49.76%	47.51%
	20	Acres	195,903	236,012	221,338	208,395
		%	43.67%	58.69%	52.76%	48.11%
Riparian (Eastern river front and river floodplain forest)	0	Acres	4,004	4,004	4,004	4,004
	10	Acres	4,004	4,004	4,004	4,004
	20	Acres	4,004	4,004	4,004	4,004
Perennial Stream	0	Miles	2,516	2,516	2,516	2,516
	10	Miles	2,516	2,516	2,516	2,516
	20	Miles	2,516	2,516	2,516	2,516
Aquatic Lakes	0	Acres	13,853	13,853	13,853	13,853
	10	Acres	13,853	13,853	13,853	13,853
	20	Acres	13,853	13,853	13,853	13,853

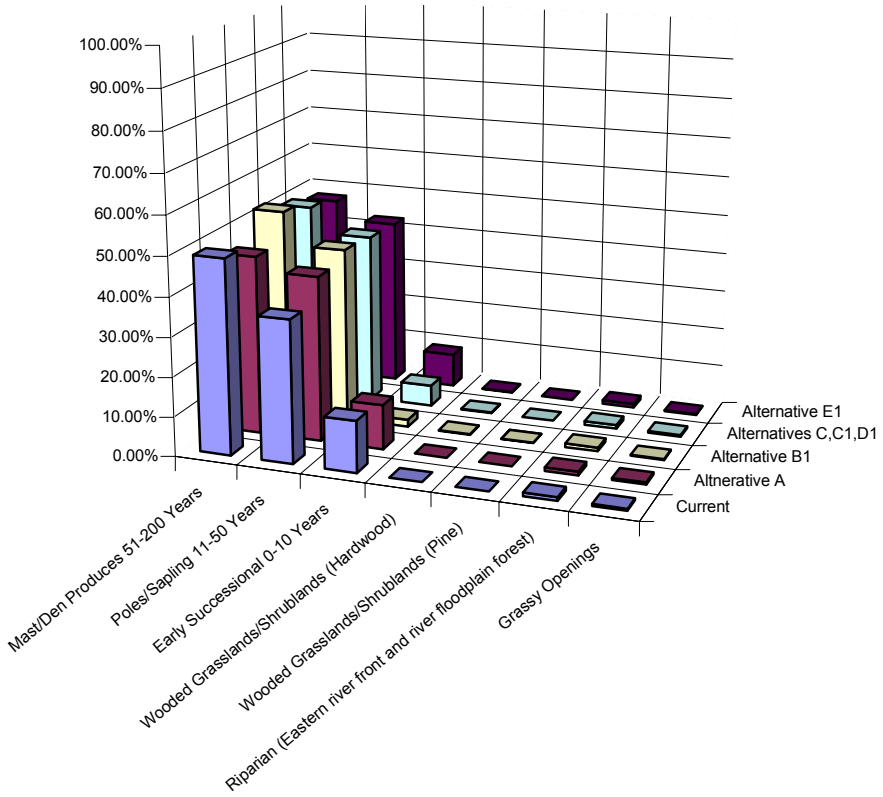

Figure 2 - 1. Percent of the DBNF in Demand Species Habitat at the end of first decade.

	Mast/Den 51-200 Years	Poles/Sapling 11-50 Years	Early Success-ional 0-10 Years	Wooded Grassland/ Shrubland (Hardwood)	Wooded Grassland/ Shrubland (Pine)	Riparian (Eastern Riverfront and River Floodplain Forest	Grassy Openings
Current	49.39%	36.12%	13.06%	0.00%	0.00%	0.93%	0.50%
Alt. A	45.34%	41.96%	11.28%	0.00%	0.00%	0.90%	0.51%
Alt. B-1	52.56%	44.26%	1.84%	0.15%	0.03%	0.95%	0.21%
Alt. C, C-1, D	49.76%	43.32%	5.37%	0.15%	0.03%	0.93%	0.50%
Alt. E-1	47.51%	42.68%	8.51%	0.14%	0.03%	0.92%	0.21%

At this level of analysis, factors affecting demand species cannot be meaningfully measured, detected, or evaluated. They are better left for a project-specific or site-specific analysis.

Wildlife Habitat

In addressing wildlife habitat, the following indicators were used:

- Relative amounts of specific habitats by Alternative
- Relative amounts of forest with mast producing capability
- Relative amounts of habitat for MIS.

The vegetative cover of the Forest relates direction to general habitat conditions. Vegetative cover may consist of various forest types as well as grassland, shrubland, and combinations of any or all. Specific conditions beyond basic habitats such as grassland, young age forest, and late successional

or old age forest are prescribed for the Forest in the proposed Alternatives (Table 2 - 18). The various amounts of specific habitat conditions affect not only general wildlife as addressed above, but also management indicator species (MIS) addressed below.

Table 2 - 18. Acres[1] of Selected Terrestrial Habitat Types, Current, and by Alternative (totals by decade).

CONDITION	2002	Decade[2]	Alt. A	Alt. B-1	Alt. C	Alt. C-1	Alt. D	Alt E-1
Grassland	2171	1st	2271	900	2200	2200	2200	900
		2nd	2371	900	2200	2200	2200	900
		5th	2800	900	2200	2200	2200	900
Wooded grassland/shrubland (Pine)	0[3]	1st	0	110	110	110	110	110
		2nd	0	110	110	110	110	110
		5th	0	110	110	110	110	110
Wooded grassland/shrubland (Hardwood)	0[3]	1st	0	610	660	660	660	610
		2nd	0	640	1330	1330	1330	640
		5th	0	640	11424	11424	11424	640
Woodland (Pine)	0[3]	1st	0	362	100	100	100	362
		2nd	0	500	100	100	100	867
		5th	0	500	500	500	500	1396
Woodland (Hardwood)	0[3]	1st	0	2871	5570	5570	5570	2871
		2nd	0	2871	25273	25273	25273	2871
		5th	0	2871	39632	39632	39632	2871
Forest, 60-70 BA overstory	500[4]	1st	15000	1825	9000	9000	9000	23986
		2nd	15000	1925	8000	8000	8000	21137
		5th	15000	1825	8000	8000	8000	21635
Riparian (prescription) land only	N/A	1st	N/A	138800	138800	138800	138800	138800
		2nd	N/A	138800	138800	138800	138800	138800
		5th	N/A	138800	138800	138800	138800	138800
Riparian (100 year floodplain)[6]	100,000	1st	100,000	100,000	100,000	100,000	100,000	100,000
		2nd	100,000	100,000	100,000	100,000	100,000	100,000
		5th	100,000	100,000	100,000	100,000	100,000	100,000
0-10 year old Yellow Pine (restoration)	1200	1st	20830	4363	8216	8216	8216	4363
		2nd	35259	8726	16232	16232	16232	8726
		5th	46799	21797	40320	40320	40320	21810
Cliff zone (mixed forest types)	110843	1st	110843	110843	110843	110843	110843	110843
		2nd	110843	110843	110843	110843	110843	110843
		5th	110843	110843	110843	110843	110843	110843
Pitch pine	0[5]	1st	0	1000	1000	1000	1000	1000
		2nd	0	2000	2000	2000	2000	2000
		5th	0	3000	3000	3000	3000	3000
Beech	8022	1st	8022	8022	8022	8022	8022	8022
		2nd	8022	8022	8022	8022	8022	8022
		5th	8022	8022	8022	8022	8022	8022
Hemlock/white pine	21389	1st	21389	21389	21389	21389	21389	21389
		2nd	21389	21389	21389	21389	21389	21389
		5th	21389	21389	21389	21389	21389	21389
Conifer Northern Hardwood	11986	1st	11986	11986	11986	11986	11986	11986
		2nd	11986	11986	11986	11986	11986	11986
		5th	11986	11986	11986	11986	11986	11986
Mixed Mesophytic	147980	1st	147980	147980	147980	147980	147980	147980
		2nd	147980	147980	147980	147980	147980	147980
		5th	147980	147980	147980	147980	147980	147980
Dry Mesic Oak	268291	1st	322001	322001	322001	322001	322001	322001
		2nd	316549	322001	322001	322001	322001	322001
		5th	316549	316549	316549	316549	316549	316549
Dry Xeric Oak	40030	1st	40030	40030	40030	40030	40030	40030
		2nd	40030	40030	40030	40030	40030	40030
		5th	40030	40030	40030	40030	40030	40030
Dry Mesic Pine Oak	65292	1st	51148	59341	59341	59341	59341	59341
		2nd	40707	56532	56532	56532	56532	56532
		5th	40707	56532	56532	56532	56532	56532
Dry Xeric Pine Oak	30813	1st	24872	28004	28004	28004	28004	28004
		2nd	18931	25195	25195	25195	25195	25195
		5th	18931	25195	25195	25195	25195	25195
0-10 year old forest	56171	1st	50000	7000	22279	22279	22279	36364
		2nd	50000	7000	22279	22279	22279	36364
		5th	38240	7162	21519	21519	21519	36364

CONDITION	2002	Decade[2]	Alt. A	Alt. B-1	Alt. C	Alt. C-1	Alt. D	Alt E-1
11-50 year old forest	155361	1st	185941	185941	185941	185941	185941	185941
		2nd	196360	153360	168640	168640	168640	182724
		5th	180413	77326	89116	89116	89116	145456
61-130 year old forest	416669	1st	388037	430317	414988	414988	414988	400953
		2nd	334976	420133	388978	388978	388978	361498
		5th	237007	320470	283764	283764	283764	262729
151-200 year old forest	1436	1st	1958	1958	1958	1958	1958	1958
		2nd	4853	4853	4853	4853	4853	4853
		5th	69297	90267	78474	78474	78474	68982
200+ year old forest	722	1st	789	789	789	789	789	789
		2nd	964	964	964	964	964	964
		5th	1520	1520	1520	1526	1526	1526
Mast-producing forest (51-200 year old oak)	212422	1st	200894	220807	213587	213587	213587	206977
		2nd	195903	236012	221338	221338	221338	208395
		5th	208392	294160	253836	253836	253836	225387

[1]1997 data adjusted for age as of 2002.

[2]Acres presented are per decade totals, except woodland and wooded grassland/shrubland acres, which are cumulative totals.

[3]These are presumed 0 acres. There may be some areas with similar structural characteristics on the ground at present as a result of the southern pine beetle infestation, but they are unlikely to have had fire applied to develop herbaceous and low shrub layers.

[4]This figure is an estimate. This condition was not commonly achieved during the last 10-15 years, and was not generally tracked when accomplished.

[5]The model used to account for yellow pine loss on the forest assumed almost total loss. This is unlikely to be the case. It is not known at present how much yellow pine, including pitch pine, remains on the DBNF.

[6]Acres estimated using a DEM model through GIS.

Alternative A would continue implementation of the 1985 Plan. It would seek to maintain the forest community balance that existed prior to the southern pine beetle (SPB) infestation. Over the next five decades, no appreciable change in forest community balance would occur, although about half of the southern yellow pine lost to SPB would likely be replaced in the first five decades. While potential habitat may exist for pitch pine, an MIS, no restoration would be scheduled and it would not likely be well represented under this Alternative. Alternative A would provide the most young age forest community within the DBNF and more quickly flatten the bulge of acres in ages 61-130. This Alternative would not specifically prescribe woodland and wooded grassland/shrubland habitat; whereas, all other Alternatives would do so at some level. Acres of forest with mast production capability would be reduced about two percent from current levels over five decades. This Alternative would reduce mast production capability more than any other alternative.

Young age forest and grassland (wildlife openings, in part) MIS such as yellow-breasted chat, eastern towhee and field sparrow, would be favored in this Alternative as it would provide more of both habitats than any other Alternative. Older forest MIS, such as black-throated green warbler, ovenbird and cerulean warbler, are provided for in this Alternative, but at a level lower than any of the other alternatives. The riparian management indicator species, the Acadian flycatcher and pitch pine, are not specifically provided for in this alternative, but they may occur in scattered locations as riparian habitat will occur in various locations under this Alternative. All of the other alternatives maintain riparian forest more intact than would be found in Alternative A, and expand the area treated as riparian habitat. Woodland and wooded grassland/shrubland MIS, such as northern cardinal, summer tanager, and chipping sparrow, are not specifically provided for in this alternative, but may occur in scattered locations. All the other alternatives specifically provide for these habitats. Southern yellow pine associated MIS, the pine warbler is not provided for in the alternative within the first five decades, as is the case for all of the other alternatives. The prairie warbler, another southern yellow pine MIS is provided for in this alternative at levels greater than Alternatives B-1

and E-1, but at levels only slightly above that in Alternatives C, C-1 and D. Northern bobwhite quail, currently associated with grasslands and open, burned yellow pine forest on the DBNF is expected to be found in grassy southern yellow pine or mixed yellow pine-oak woodland and wooded grassland. This habitat is provided for in this Alternative, at levels as described for prairie warbler.

Alternative B-1 would provide a forest community balance similar to current conditions (prior to SPB). Over the next five decades, no appreciable change in forest community balance would occur, although only about one-third of all the southern yellow pine, including pitch pine, lost to SPB is likely to be replaced in five decades. This Alternative provides the least young age forest condition within the national forest and most slowly flattens the bulge of acres in ages 61-130. This Alternative leads to the greatest amount of older forest on National Forest System lands. This Alternative provides as much woodland and wooded grassland/shrubland habitat as Alternative E-1, less than that provided by Alternatives C, C-1 and D, and more than that provided by Alternative A. Acres of forest with mast production capability will be increased about 38 percent from current levels over five decades. This Alternative increases mast production capability more than any other alternative.

Less young age forest habitat for the MIS yellow-breasted chat and eastern towhee is provided in this alternative than in any other. This Alternative provides for the grassland (wildlife openings, in part) MIS, field sparrow, at the same amount as does Alternative E-1, but both provide less habitat than in the other alternatives. More habitat is provided for the older forest MIS, black-throated green warbler, ovenbird and cerulean warbler, than in any other alternative. The riparian MIS, Acadian flycatcher, and the MIS pitch pine, are specifically provided for at the same level as in Alternatives C, C-1, D, and E-1, but more than in Alternative A. Woodland and wooded grassland/shrubland MIS, northern cardinal, summer tanager, and chipping sparrow, are specifically provided for in this Alternative at the same level as Alternative E-1, more than in Alternative A, and less than in Alternatives C, C-1 and D. Southern yellow pine associated MIS, the pine warbler is not provided for in the alternative within the first five decades, as is the case for all of the other alternatives. The prairie warbler, another southern yellow pine MIS is provided for in this Alternative at levels the same as Alternative E-1, but at levels higher than in Alternative A. The southern yellow pine habitat provided in Alternative B-1 is only slightly less than that in Alternatives C, C-1 and D. Northern bobwhite quail, currently in low numbers associated with grasslands and open, burned yellow pine forest on the DBNF is expected to be found in greater number in open, grassy southern yellow pine or mixed yellow pine-oak woodland and wooded grassland. This habitat is provided for in this Alternative, at levels as described for prairie warbler.

Alternatives C, C-1, and D are identical in their objectives for these habitats, but implementation may vary by the budgets available for the work. All would provide a forest community balance similar to current (prior to SPB) conditions. Over the next five decades, no appreciable change in forest community balance would occur, although only about one-third of the southern yellow pine, including pitch pine, lost to SPB is likely to be replaced in the five decades. These alternatives provide more young age forest condition community within the national forest than Alternative B-1, but less than Alternatives A and E-1, and more slowly flattens the bulge of acres in ages 61-130 than Alternatives A and E-1. These alternatives provide for less older forest than Alternative B-1, but more than Alternatives A and E-1. These alternatives provide more woodland and wooded grassland/shrubland habitat than Alternatives B-1, E-1 and A. Acres of forest with mast production capability will be increased about 20 percent from current levels over five decades. These alternatives increase mast production capability more than any other alternative except B-1.

Less young age forest habitat for the MIS yellow-breasted chat and eastern towhee is provided in these alternatives than in Alternatives A and E-1, but more than in Alternative B-1. These alternatives provide for less grassland habitat (wildlife openings, in part) to support the MIS field sparrow than does Alternative A, but more than in Alternatives B-1 and E-1. More habitats are provided for the older forest MIS black-throated green warbler, ovenbird and cerulean warbler, than in Alternatives A and E-1, but less than in Alternative B-1. The riparian MIS, Acadian flycatcher, and the MIS pitch pine, are specifically provided for at the same level as in Alternatives B-1 and E-1, but more than in Alternative A. More woodland and wooded grassland/shrubland habitat for the MIS northern cardinal, summer tanager, and chipping sparrow, is specifically provided than in Alternatives A, B-1, and E-1. Southern yellow pine associated MIS; the pine warbler is not provided for in the alternative within the first five decades, as is the case for all of the other alternatives. The prairie warblers, another southern yellow pine MIS, is provided for in this Alternative at levels greater than Alternative B-1 and E-1, but at levels slightly below that in Alternative A Northern bobwhite quail, currently in low numbers associated with grasslands and open, burned yellow pine forest on the DBNF is expected to be found in greater number in open, grassy southern yellow pine or mixed yellow pine-oak woodland and wooded grassland. This habitat is provided for in this Alternative, at levels as described for prairie warbler.

Alternative E-1 would provide a forest community balance similar to current conditions (prior to SPB). Over the next two decades, no appreciable change in forest community balance would occur, although only one-third the southern yellow pine, including pitch pine, lost to SPB is likely to be replaced in two decades. This Alternative provides almost as much young age forest community within the national forest as does Alternative A. It flattens the bulge of acres in ages 61-130 almost as quickly as Alternative A. This Alternative leads to less older forest on National Forest System lands than in Alternatives B-1, C, C-1 and D, but more than in Alternative A. This Alternative provides as much woodland and wooded grassland/shrubland habitat as Alternative B-1, more than Alternative A, and less than Alternatives C, C-1 and D. Acres of forest with mast production capability will be increased about six percent from current levels over five decades. This Alternative increases mast production capability more than Alternative A, but less then any other alternative.

Less young age forest habitat for the MIS yellow-breasted chat and eastern towhee is provided in this Alternative than in Alternative A but more than in Alternatives B-1, C, C-1, and D. This Alternative provides for less grassland habitat (wildlife openings, in part) to support the MIS field sparrow than do Alternatives A, C, C-1, and D, but at the same level as in Alternative B-1. More habitats are provided for the older forest MIS -- black-throated green warbler, ovenbird and cerulean warbler -- than in Alternative A, but less than in Alternatives B-1, C, C-1, and D. The riparian MIS, Acadian flycatcher, and the MIS pitch pine, are specifically provided for at the same level as in Alternatives B-1, C, C-1, and D, but more than in Alternative A. More woodland and wooded grassland/shrubland habitat for the MIS northern cardinal, summer tanager, and chipping sparrow, is specifically provided than in Alternative A, but less than in Alternatives C, C-1, and D. About the same amount is provided in Alternative B-1. Southern yellow pine associated MIS, the pine warbler, is not provided for in the alternative within the first five decades, as is the case for all of the other alternatives. The prairie warbler, another southern yellow pine MIS is provided for in this Alternative at a level the same as in Alternative B-1, but at levels slightly below that in Alternatives C, C-1, D, and A. Northern bobwhite quail, currently in low numbers associated with grasslands and open, burned yellow pine forest on the DBNF is expected to be found in greater numbers in open,

grassy southern yellow pine or mixed yellow pine-oak woodland and wooded grassland. This habitat is provided for in this Alternative, at levels as described for prairie warbler.

ISSUE 6 – AQUATIC AND RIPARIAN AREAS

Some Forest uses and management activities can degrade the health of aquatic and riparian habitats as well as general water quality. This issue is addressed in several sections of Chapter 3 (Soil and Water, Aquatic Viability, and Riparian Viability). In addressing the Aquatic and Riparian issue, the following indicators were used:

- Soil disturbance was evaluated for each alternative based on the acreage of bare soil, percent reduction in soil productivity, and percent of the Forest with long-term soil commitment.
- Watershed and water quality conditions were evaluated for each alternative based on changes in water yield and reductions in the Watershed Health Index.
- Aquatic and riparian habitats were evaluated for each alternative based on aquatic fragmentation and riparian disturbance.
- MIS (management indicator species).

Table 2 - 19 summarizes how the Alternatives address riparian and aquatic habitats and describes changes to soil and water resources under the various Alternatives.

Table 2 - 19. Aquatic and Riparian Areas and consequences, displayed by Alternative.

CONSEQUENCE	Alt. A	Alt. B-1	Alt. C	Alt. C-1	Alt. D	Alt. E-1
Percent of Forest in Bare Soil / Decade[1]	1.6	0.4	1.9	1.9	1.9	4.4
Percent Reduction in Soil Productivity[2]	5-15	<5 - 15	5 - 15	5 - 15	5 - 15	5 - 15
Percent of Forest with Long-Term Soil Commitment[3]	1.0%	0.4%	1.4%	1.4%	1.4%	1.7%
Percent Increase in Water Yield	0.46	0.12	0.80	0.80	0.80	0.94
Watersheds with a Reduction in "Watershed Health Index" (49 total)	0	0	0	0	0	0
Amount of Aquatic Fragmentation (dams, pollution, ownership)	Moderate	Low	Low	Low	Moderately High	Moderately High
Amount of Riparian Disturbance	Moderate	Low	Moderately Low	Moderately Low	Moderately Low	Moderately Low
Potential Direct and Indirect Impacts to Aquatic Viability	Moderate	Moderately Low	Low	Low	Moderately Low	Moderate
Potential Cumulative Impacts to Aquatic Viability	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Potential Impacts to MIS	Seven fish species[4], Moderate	Aquatic indices[5], Moderately Low	Aquatic indices[5], Low	Aquatic indices[5], Low	Aquatic indices[5], Moderately Low	Aquatic indices[5], Moderate

[1]Projected a real extent of bare or exposed mineral soil created by soil disturbing activities. Exposed soil generally results in increased erosion and sediment delivery to streams.

[2]For purposes of this analysis, a threshold value of 15 percent reduction in long-term soil productivity potential was used for determining potential detrimental impact to those acres subject to soil disturbing activities. This value, coupled with real extent limits of bare soil, will serve as an early warning signal of reduced productive capacity. (USDA Forest Service Soil Management Handbook, FSH 2509.18, Section 2.05)

[3]The percent of the Forest so potentially impacted from various activities such as associated with timber harvest, recreation construction, and oil and gas development that their productive capacity is reduced in the long-term. Many of these acres though represent a commitment of soil resources necessary to support multiple use management goals and objectives as proposed for each alternative. It is recognized that while some soil acreage is necessary to develop the infrastructure needed for sustainable production of goods and services, many of the affected acres are dedicated to future use and management over the long-term.

[4]See Chapter 3, Aquatic Viability, for a list of the seven fish species.

[5]Aquatic indices refer to aquatic macro invertebrate assemblage indices, which will be used in lieu of MIS (see Chapter 3, Aquatic Viability, for more information).

ISSUE 7 – FIRE MANAGEMENT

Prescribed and wildland fire, as well as fire exclusion, are discussed throughout this Draft Environmental Impact Statement. Fire can be construed as a positive or negative disturbance regime, depending on cause, location, intensity, return intervals, and management objectives. The fire regime, which encompasses patterns of occurrence, size, severity and effects, in a given area or ecosystem, has changed over time.

Wildland fire patterns, acres burned and types of ignition could be influenced by Alternative selection, but cannot be predicted. Therefore, wildland fire indicators are not included in this comparison.

Prescribed fire objectives vary in importance across the Alternatives, as do yearly acreage objectives. In Alternatives C, C-1 and D, the yearly objectives increase throughout the planning period.

In addressing prescribed fire, the following indicators were used:

- Acres by primary burn objective
- Emissions of particulate matter in tons

Table 2 - 20. Acres of annual prescribed burning for ecosystem management and fuel reduction, Alternatives A, B-1 and E-1.

Primary Prescribed Burning Objective	Alt. A	Alt. B-1	Alt. E-1
Site preparation prior to planting for yellow pine reforestation	2,083	436	436
Restoration of hardwood or mixed woodland and wooded grassland/shrubland[1] (first application of fire)	0	395	395
Understory burn for maintenance of existing fire-mediated[2] habitat (second application of fire or later) and/or fuel reduction[3]	12,917	1,546	1,546
Annual acres	15,000	2,377	2,377

[1]About 81% of the restoration would be directed toward woodland and the remaining 19% would be directed toward wooded grassland/shrubland.
[2]See Chapter 3 for discussion.
[3]This acreage is the remainder after site preparation and restoration burn objectives

Table 2 - 21. Acres of annual prescribed burning for ecosystem management and fuel reduction, Alternatives C, C-1 and D.

Primary Prescribed Burning Objective	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Site preparation prior to planting for yellow pine reforestation	822	822	822	822	822	822	822	822	822	822
Restoration of hardwood or mixed woodland and wooded grassland/shrubland (first application of fire)[1]										
Woodland	3,775	4,782	5,788	6,795	7,802	8,808	9,815	10,822	11,828	12,583
Wooded grassland/shrubland	886	1,122	1,359	1,595	1,831	2,067	2,304	2,540	2,776	2,953
Subtotal of restoration burn acres	4,661	5,904	7,147	8,390	9,633	10,876	12,119	13,362	14,604	15,537
Understory burn for maintenance of existing fire-mediated habitat (second application of fire or later) and/or fuel reduction[2]	9,517	12,274	15,031	17,788	20,545	23,302	26,059	28,816	31,574	33,641
Annual acres	15,000	19,000	23,000	27,000	31,000	35,000	39,000	43,000	47,000	50,000
Anticipated range per year	7,500	9,500	11,500	13,500	15,500	17,500	19,500	21,500	23,500	25,000
	22,500	28,500	34,500	40,500	46,500	50,000	50,000	50,000	50,000	50,000

[1]About 81% of the restoration would be directed toward woodland and the remaining 19% would be directed toward wooded grassland/shrubland.

[2]This acreage is the remainder after site preparation and restoration burn objectives.

Table 2 - 22. Estimated particulate matter (PM2.5) emissions, in tons, resulting from prescribed fires on the DBNF.

			Percent Change from Current Inventory			
	Annual Emissions		Emissions Due to Direct/Indirect Effects		Emissions Due to Cumulative Effects	
Alternative	**Minimum**	**Maximum**	**Minimum**	**Maximum**	**Minimum**	**Maximum**
A	761	761	6.9	6.9	7.0	7.0
B-1	143	143	1.3	1.3	1.4	1.4
C	1,159	2,458	10.5	22.4	10.7	22.5
C-1	1,159	2,458	10.5	22.4	10.7	22.5
D	1,159	2,458	10.5	22.4	10.7	22.5
E-1	143	143	1.3	1.3	1.4	1.4

Current PM2.5 emission levels were taken from the EPA 1999 emissions inventory available at http://www.epa.gov/air/data/netdb.html

ISSUE 8 – FOREST HEALTH

The environmental effects to forest health are disclosed under Chapter 3 – Forest Health. These environmental effects are general and provide no absolute answer because the desired conditions that provide the basis for describing a healthy forest vary across the landscape. Some Prescription Areas move toward old-age conditions while others move toward a variety of habitat conditions.

The following indicators were used to provide some basis to address the environmental effects to forest health:

- Forest richness
- Forest evenness
- Native insects and pathogens and Non-native invasive species
- Physical tree features
- Overstory vegetation

Richness and Evenness: The six major forest types would continue to be present under each of the Alternatives. However, stand compositions are expected to change as individual tree species grow and die. Hardwoods would tend to replace southern-yellow pine stands that died from southern pine beetle attack. A shift in the composition of hardwood species would occur as oak trees die from oak decline. Dead oaks, when not replaced through management actions that favor their reestablishment, would be replaced by other hardwood species that are more tolerant to shade. Rotation ages are expected to vary from 200 years in areas where vegetation is manipulated to more than 400 years where old-age trees are encouraged. Alternative B-1 would provide the least amount of early succession because it does half the amount of southern-yellow pine planting than the other alternatives. Natural regeneration that favors early successional hardwood species would be highest in Alternatives A and E-1; reduced by one-third in Alternatives C, C-1, and D; and in Alternative B-1 would be only nine percent of that called for in Alternatives A or E-1 (Table 2 - 23).

Non-native invasive species: The Forest Service Strategic Plan (2000) identified a milestone of decreasing by 5 percent the acres that are at extreme risk from insect and disease. Within the next decade or two, the biggest impact from a non-native invasive species is likely to come from defoliation-induced oak decline initiated by gypsy moth. Through the use of a risk rating model and the Continuous Inventory of Stand Condition (CISC) database, hardwood forest types were rated as being at moderate, high, or extreme risk of defoliation from an infestation of gypsy moth. Comparing the number of acres would be in an extreme risk condition by 2012 Table 2 - 23 reveals that:

- Alternative E-1 would decrease by 67 percent
- Alternative A would decrease by 47 percent
- Alternatives C, C-1 and D would decrease by 25 percent
- Alternative B-1 would increase by 3 percent.

However, by the year 2012 as trees age, the amount of acres that become a high risk increases by 27 percent for all Alternatives. Combining the extreme and high-risk acres from Table 2 - 23 together reveals that:

- Alternative E-1 would decrease by 17 percent
- Alternative A would decrease by 8 percent
- Alternative C, C-1, and D would increase by 2 percent
- Alternative B-1 would increase by 15 percent.

Large-scale catastrophically damaging pest activity is more likely in older-age trees. When combined with other environmental conditions, such as droughts, storms, and stand density, that likelihood increases even more.

Hemlock woolly adelgid is expected to invade the DBNF regardless of Alternative. There is no known suppression or eradication technique. The remaining non-native invasive species currently present would continue to be present. Although a complete inventory is not available, appropriate action would be taken once these species are identified and inventoried.

Native insects and pathogens: The southern pine beetle epidemic appears to have run its course but has left behind changes in species composition on nearly 100,000 acres. Dead pines, when not replaced through planting efforts, are being replaced by hardwoods. Alternatives A and E-1 would provide for the highest level of pine reforestation, 15,000 and 24,000 acres respectively. Alternatives C, C-1, and D provide for pine reforestation on approximately 9,000 acres.

Nearly 25 percent of the entire Forest is susceptible to the complex of factors that make up oak decline. Alternative E-1 and A would reduce the vulnerable acreage by approximately four percent and two percent respectively, while Alternatives C, C-1, and D would likely increase the area at risk by approximately one percent. Alternative B-1 would increase the area at risk by approximately four percent.

Oak decline becomes more prevalent as stands of trees age. Dead oaks, when not replaced through management actions to favor their reestablishment, would be replaced by other hardwood species that are more tolerant to shade. Through the use of a risk rating model and the corporate CISC database, hardwood forest types were rated as being damaged, vulnerable, or unaffected to oak decline. Comparing the number of acres that would be in the damaged and vulnerable condition by 2012 Table 2 - 23 reveals that:

- Alternative E-1 would decrease by 17 percent,
- Alternative A would decrease by 8 percent,
- Alternatives C, C-1, and D would increase by 2 percent, and
- Alternative B-1 would increase by 15 percent.

Physical tree features and overstory vegetation: Fire scars and tree wounds near ground level would continue to be present as a result of wildland fire and prescribed fire activity. No quantifiable estimate is provided. An estimate of live crown ratio and tree density has not been provided, but as more thinning occurs, the area where improvement in crown sizes and tree growth would expand. The number of acres that would be considered old age would increase under all the Alternatives. Comparing the number of acres of old-age trees in 2012 Table 2 - 23 reveals that:

- Alternative E-1 would increase by 20 percent,
- Alternatives C, C-1, and D would increase by 24 percent,
- Alternative A would increase by 26 percent, and
- Alternative B-1 would increase by 31 percent.

Table 2 - 23. Forest health indicators and their measurement across Alternatives.

INDICATOR	2002 Status	Alt. A	Alt. B-1	Alt. C, C-1 & D	Alt. E-1
Richness (measured by number)	6	6	6	6	6
Major forest types					
Evenness (measured by thousand-acres)					
Xeric oak	40	48	50	49	50
Mesic oak	267	300	307	305	307
Pine & pine/hardwood	88	88	5	10	5
Hardwood/pine	68	48	48	48	48
Mixed mesophytic	165	207	218	216	218
Cove conifer	34	34	34	34	34
Early succession provided	N/A	90	10	60	80
Non-native invasive species					
Gypsy moth 1 (measured by thousand-acres)					
Extreme risk condition	75	40	77	56	25
High risk condition	82	104	104	104	104
Moderate risk condition	111	123	87	108	139
(Measured by presence)					
Hemlock woolly adelgid	Nearby	Present	Present	Present	Present
Kudzu (Forest-wide)	Present	Present	Present	Present	Present
Asiatic Bittersweet (Morehead & Stanton)	Present	Present	Present	Present	Present
Japanese knotweed (Stearns)	Present	Present	Present	Present	Present
Nepal browntop (Forest-wide)	Present	Present	Present	Present	Present
Musk thistle (Morehead)	Present	Present	Present	Present	Present
Spotted knapweed (London)	Present	Present	Present	Present	Present
Crown Vetch (Morehead & London)	Present	Present	Present	Present	Present
Zebra mussel	Nearby	Present	Present	Present	Present
Asian Clam	Present	Present	Present	Present	Present
Beech bark disease (measured by presence)	Nearby	Present	Present	Present	Present
Native insects and pathogens (measured by thousand-acres)					
Southern pine beetle impacted[2]	100	Nominal	Nominal	Nominal	Nominal
Oak Decline[3]					
Damaged condition	96	51	87	66	36
Vulnerable condition	61	94	94	94	94
Unaffected condition	515	527	491	511	542
Physical tree features					
Fire scars and butt-rot (measured by presence)	Present	Present	Present	Present	Present
Live Crown Ratio[4] (measured by percent)	Unknown	Unknown	Unknown	Unknown	Unknown
Overstory vegetation					
Old age trees (measured by thousand-acres)[5]	308	387	404	383	372
Tree density (measured by stocking)[6]	Unknown	Unknown	Unknown	Unknown	Unknown

[1]Gypsy Moth risk rating is based on an analysis of data from the Forest's corporate database, CISC (Continuous Inventory of Stand Condition). The attribute data (forest type, condition class, site index, and age) from CISC was summarized using the CISC Risk Rating For Gypsy Moth model, which was derived from the work of Kurt W. Gottschalk, Research Scientist, and others, USDA Forest Service, Northeastern Research Station, Morgantown, WV Field Office.

[2]High-risk southern pine beetle – Yellow pine forest types, 50 years or older with basal area greater than or equal to 120 square-feet per acre.

[3]Oak Decline risk rating is based on an analysis of data from the Forest's corporate database, CISC (Continuous Inventory of Stand Condition). The attribute data (forest type, condition class, site index, and age) from CISC was summarized using the Oak Decline Risk Rating model, which was derived from the work of Steve Oak, Forest Pathologist, USDA Forest Service, Forest Health Protection, Asheville, NC Field Office.

[4]Live Crown Ratio is not available at the landscape scale of a Forest Plan. It is more appropriately used at the individual tree or stand level.

[5]Old age trees – trees occurring in a stand where their age is greater than 80 years. This is generally when the age in the growth cycle of a tree or stand at which the periodic annual increment for height, diameter, basal area, or volume is at a maximum. In some situations this age is considerably less (e.g., Virginia pine, Scarlet oak).

[6]Tree densities also referred to as stocking (overstocked, understocked, adequately stocked), is not available at the landscape scale of a Forest Plan. It is more appropriately used at the stand level.

ISSUE 9 – TIMBER PRODUCTS

This section is a summary of the factors within each alternative that would affect the Forest's output of timber products. The analysis of the effects of the alternatives on timber products can be found in the Timber Products section of Chapter 3.

As a result of management for various objectives in all alternatives, the Forest would produce roundwood products (short logs and tree-length logs) that would be delivered to mills that produce rough and dimension lumber, pallet wood, veneer, posts, poles, oriented strand board, bark mulch, and other secondary products. Such timber products are an important economic resource within the human environment. In addressing the timber products issue identified in Chapter One, the following considerations have been made:

- Amounts, locations, and types of timber harvested would depend on the emphasis of the Alternative and Desired Future Condition of the individual Prescription Areas.
- Timber production from suitable timberland would always occur on a long-term, non-declining, sustained-yield basis, as required by law.
- Efficient utilization of cut trees would occur in logging operations, except where woody material must remain to fulfill objectives.
- Harvest and regeneration methods would be determined on a site-specific basis, although the shelterwood with reserves method (two-aged shelterwood) would likely be the most commonly used method. Silvicultural systems and methods available for use on the DBNF are explained in the Proposed Revised Forest Plan (Appendix H), as required by CFR 219.15.
- Economic goals would be determined during Forest Plan implementation. Such goals concern efficiency of operation and staying with budgeted allocations each year. However no specific economic goals for the timber program would be set by these Alternatives.

The effects of the alternatives on timber production was measured by the following indicators:

- Area of timberland available for timber production (suitable timberland)
- Area and types of treatment planned
- Allowable sale quantity (ASQ) timber that could be produced on suitable timberland
- Program quantity/decade of timber that is estimated to be produced on all forest land
- Relative changes from existing trend in quality (value) of timber.

Table 2 - 24 displays those factors (including four of the above indicators) that vary by alternative that affect timber production. Table 2 - 25 displays a relative comparison of factors that affect timber quality.

Table 2 - 24. Factors affecting timber product output, by alternative, first decade.

INDICATOR	Unit of Measure	Alt. A	Alt. B-1	Alt. C	Alt. C-1	Alt. D	Alt. E-1
Land Suitable For Timber Production	Total Acres	578,105	70,000	367,805	367,805	367,805	395,416
Allowable Sale Quantity (ASQ)	MMCF*	40.7	5.1	21.7	21.9	21.5	44.9
Timber Program Quantity (TPQ)	MMCF*	42.5	5.3	22.7	22.9	22.5	46.9
Two-age Forest Regeneration (10-20 BA residual)	Average acres/year	3,000	296	1,428	1,428	1,428	3,225
Uneven-age in Riparian (approx. 60 BA residual)	Average acres/year	0	164	164	164	164	164
Thinning in Even-age or Two-age Stands	Average acres/year	1500	183	900	900	900	2399
Harvest for wooded-grassland (10-20 BA residual)	Average acres/year	0	77	77	77	77	72
Harvest for Woodland (30-50 BA residual)	Average acres/year	0	323	567	567	567	323
Site Prep for Tree Planting and Release	Average acres/year	2,083	436	822	822	822	436
Site Preparation for Natural Regeneration	Average acres/year	2,917	264	1,406	1,406	1,406	3,200
Prescribed Understory Burning	Average acres/year	12,917	1,546	32,500	32,500	32,500	1,546

* MMCF = Million Cubic Feet

Table 2 - 25. Short-term and long-term change* in timber product value, by alternative.

Period	Indicators	Alt. A	Alt. B-1	Alt. C, C-1, D	Alt. E-1
10 Year Change	**Average Growing stock value/ acre**	3 – continued harvesting of age 70-100 stands	5 – limited harvest, net growth	3 – maple mortality offset by oak growth	3 – longer rotation on smaller area
	High-value species (oak component)	2 – conversion of oak to pine, limited fire	3 – increased maple competition	4 – slight net growth on existing oak	4 – slight net growth on existing oak
100 Year Change	**Average growing stock value/ acre**	3 – continued harvesting of age 70-100 stands	2 – decline as stands move toward uneven-age old-growth	3 – concentrated in fewer, but larger trees	4 – medium rotation on smaller area
	High-value species (oak component)	2 – limited understory burning, conversion to pine	1 – due to fire exclusion	4 – continued oak regen. & growth, fire	3 – herbicide may replace effect of fire

* 1= moderate decrease 2= slight decrease 3= not noticeable 4= slight increase 5= moderate increase
(assumes no major disease or insect infestation effect)

ISSUE 10 – MINERALS

The minerals issue presented by the public had concerns about the implementation of mineral operations on the Daniel Boone National Forest and the potential for impacts from mineral activities. The effect of the minerals program in the proposed Plan is detailed in Chapter 3, and is located in different areas such as the Riparian Corridor Prescription Area, the Air Quality Assessment, and other prescription areas.

A concern within the minerals issue is the need for mineral resource development to benefit the development of local communities. The availability of federal minerals has an impact on the domestic production of oil, gas and coal resources. Federal oil and gas development is covered in Chapter 3, which identifies the stipulations that will be applied within the Prescription Areas. Table 2 - 26 shows the distribution of surface stipulations by Alternative. Table 2 - 27 is a comparison of the emphasis for leasing of federal coal rights by alternative, using Alternative A as a baseline.

In attempting to balance competing public interests, management activities would strive to:

- Identify areas that Federal mineral development may have an immediate detrimental effect on other resources and identify stipulations that offer protection for those areas.
- Provide mineral resources where the opportunities occur in a timely manner, developing federal minerals in areas where the plan provides the opportunity.

Table 2 - 26. Oil and gas lease stipulations by Alternative.

PRESCRIPTION AREA	Acres	Alt. A	Alt. B-1	Alt. C	Alt. C-1	Alt. D	Alt. E-1
1.A.Research Natural Areas	687	NSO	NSO	NSO	NSO	NSO	NSO
1.C.Cliffline Community	111,205	NSO	NSO	NSO/CSU[1]	NSO/CSU[1]	NSO/CSU[1]	NSO/CSU[1]
1.E. Riparian Corridor	155,379	N/A	NSO	CSU	CSU	CSU	CSU
1.G. Rare Community (Est.)	1,200	N/A	CSU	CSU	CSU	CSU	CSU
1.I. Designated Old-Growth	15,300	N/A	N/A	CSU	CSU	CSU	CSU
1.J. Significant Bat Caves	6,115	NSO	NSO	NSO	NSO	NSO	NSO
1.K. Habitat Diversity	375,891	N/A	N/A	LN	LN	LN	N/A
1.M. Custodial Area	394,163	N/A	NSO	N/A	N/A	N/A	N/A
2.A. Clifty Wilderness	12,646	NAA	NAA	NAA	NAA	NAA	NAA
2.B. Beaver Creek Wilderness	4,791	NAA	NAA	NAA	NAA	NAA	NAA
2.C. Wilderness Study Area	2,834	N/A	NSO	N/A	N/A	N/A	N/A
3.A. Developed Recreation	3,700	NSO	NSO	NSO	NSO	NSO	NSO
3.B. Large Reservoirs	30,673	NSO	NSO	NSO	NSO	NSO	NSO
3.C. Wild & Scenic Rivers	15,173	NSO	NSO	NSO	NSO	NSO	NSO
3.E. Red River Gorge Geological Area	16,042	NSO	NSO	NSO	NSO	NSO	NSO
3.F. Natural Arch Scenic Area	1,065	NSO	NSO	NSO	NSO	NSO	NSO
3.H.1. Ruffed Grouse	10,535	LN	N/A	N/A	LN	LN	N/A
4.A. Timber Production	396,697	N/A	N/A	N/A	N/A	N/A	LN
4.B. General Forest (1985)	568,206	LN	N/A	N/A	N/A	N/A	N/A
5.A. Communications Sites	20	NSO	NSO	NSO	NSO	NSO	NSO
5.C. Source Water Protection	34,015	N/A	NSO	NSO/CSU[2]	NSO/CSU[2]	NSO/CSU[2]	NSO/CSU[2]

CSU = Controlled Surface Use NAA = Not Administratively Available NSO = No Surface Occupancy
LN = Lease Notice N/A = Not Applicable

[1]NSO above and CSU below the cliffline.

[2]Zone 1 (NSO) and zone 2 (CSU).

Table 2 - 27. A comparison of the emphasis for leasing of federal coal rights by alternative, using Alternative A as a baseline.

Amount of change	Alt. A	Alt. B-1	Alt. C	Alt. C-1	Alt. D	Alt. E-1
	0	-2	-1 to 0	0	0	2

Scale:
0 = Alternative A (1985 Plan)
1 = Slight change
2 = Moderate change
3 = Significant change

The unsuitability criteria identify the areas of the forest that are suitable for coal leasing. This criteria is geared toward surface mining which is not allowed on Daniel Boone NF lands based upon the Surface Mining Control Reclamation Act (SMCRA). Any federal coal areas identified through these criteria will only be deep mined by projects that identify through analysis that no subsidence potential and no retreat mining allowed to protect the surface resources.

ISSUE 11 - RECREATIONAL OPPORTUNITIES

The main body of analysis for recreational opportunities is located within the Recreation section of Chapter 3 of this document. There is also some analysis of the effects of recreation elsewhere in this document. These effects are usually very localized and are primarily related to, and analyzed in, the Soil and Water, Riparian, Special Areas, Heritage and Demand Species analyses. Recreation effects to these areas usually are from soil loss off trails and its effects on water/riparian/aquatic resources; use of Special Areas (e.g., Wilderness, Red River Gorge, Wild and Scenic Rivers) for recreational purposes, damage to Heritage resources by dispersed recreational activities and recreational pursuit of Demand Species.

Several indicators were used to compare the alternatives to see how well each alternative addressed this issue. Given the broad scale for a Forest Plan level analysis and the difficulty in measuring the wide variety of outdoor recreation management activities that occur on the Forest, these indicators were deemed to be the most reasonable to use. They are related to the most popular recreational activities and the ones with the most effects. Indicators are noted in parenthesis for various management activities listed below. Various tables in Chapter 3 as well as Table 2 - 28, Table 2 - 29, and Table 2 - 30 below give detailed comparisons of the alternatives.

In addressing the Recreational Opportunities issue, management activities would strive to:

- Provide a spectrum of high quality, nature-based recreation settings and opportunities that are not widely available outside the Forest. (Indicator: ROS categories-Distribution by acres and percentage. Table 2 - 28)
- Manage areas to provide for the “backcountry” (semi-primitive/remote) recreation experiences that are not widely available outside the Forest. (Indicator: ROS categories-Distribution by acres and percentages. Table 2 - 28)

Provide the following recreational opportunities and facilities:

- Hiking, biking, and equestrian opportunities within high quality landscapes (Indicator: Miles of non-motorized trails -- Table 2 - 29.)
- Off-highway vehicle riding opportunities (Indicator: Miles of motorized trails -- Table 2 - 29.)

- Improvements, expansions, or additions of facilities that provide quality developed recreational opportunities (Indicator: PAOTs by Development Level -- Table 2 - 30.)
- A variety of dispersed recreational opportunities such as camping, boating, rock climbing and similar activities. (Indicator: ROS categories-Distribution by acres and percentages -- Table 2 - 28; and PAOT's by Development Level -- Table 2 - 30.)
- Scenic and wildlife viewing opportunities within high quality landscapes, which would enhance viewing opportunities while driving for pleasure. (Indicator: ROS categories-Distribution by acres and percentages -- Table 2 - 28)
- Hunting and Fishing opportunities. (No Recreation Indicators selected. Also, see Demand Species)
- Interpretive, or other special recreation needs identified locally. (No indicators selected.)

Although the opportunities for outdoor recreation are extensive and the public demand for these opportunities is seemingly boundless, the Forest's capability to meet these demands is neither static nor boundless. Visitor preferences can shift over time, and changing financial limitations and environmental and heritage concerns must be considered. In order to maximize value to the public within the available resources, the Forest will focus on providing those recreational opportunities that are unique, or of exceptional long-term value, in a manner that focuses on maximizing visitor satisfaction within financial, environmental and heritage limitations.

Table 2 - 28 provides a summary of the differences in the percentage of each ROS experiences from the current situation resulting from the implementation of the various alternatives.

Table 2 - 28. Estimated percentage of Recreation Opportunity Spectrum (ROS) experiences, in acres and percent of DBNF, by Alternative.

ROS Category	Alt. A	Alt. B-1	Alt. C	Alt. C-1	Alt. D	Alt. E-1
Primitive *	19,564	22,398	19,564	19,564	19,564	19,564
Semi-Primitive Non-Motorized	20,811	105,897	20,811	20,811	35,186	13,875
	3%	15%	3%	3%	5%	2%
Semi-Primitive Motorized	13,875	385,550	13,875	13,875	70,373	13,875
	2%	55%	2%	2%	10%	2%
Roaded Natural	617,331	174,932	617,331	617,331	546,108	610,280
	89%	25%	89%	89%	78%	88%
Rural	41,623	27,749	41,623	41,623	41,623	55,498
	6%	4%	6%	6%	6%	8%
Urban	88	88	88	88	138	200
	< 1%	<1%	<1%	<1%	<1%	<1%

* Social and managerial settings are managed for primitive in Wilderness and Wild Rivers until limits of acceptable change process is complete. No areas on the DBNF can meet primitive ROS as presently defined.

Table 2 - 29 compares by alternative the expected total number of trail miles offered that would be available to the public. Estimated miles of permanent trail closures due to problems with a particular trail are factored in to the totals. Closures would be done to provide a better recreation experience for most riders or protect the ecosystem.

Table 2 - 29. Estimated total number of miles of trails offered by Alternative.

TYPE OF TRAIL	Alt. A	Alt. B-1	Alt. C	Alt. C-1	Alt. D	Alt. E-1
OHV only	22	0	22	65	85	85
All others*	590 (OHVs allowed on 126 miles)	560 (No OHVs allowed)	590 (OHVs allowed on 108 miles)	620 (OHVs allowed on 108 miles)	640 (OHVs allowed on 118 miles)	640 (OHVs allowed on 118 miles)
Total	612	560	612	685	725	725

*Includes trails where hiking, mountain bike and horse use are allowed singly or in combination with each other. It also includes trails where OHV use is allowed in combination with other trail uses.

Table 2 - 30 illustrates, for each alternative, a summary of the differences in capacity of the recreation sites (PAOT) by the development level of these sites.

Table 2 - 30. Estimated developed recreation offered in PAOTs (persons at one time) by facility development level and Alternative.

Development Level	Alt. A	Alt. B-1	Alt. C	Alt. C-1	Alt. D	Alt. E-1
2	990	600	900	900	900	500
3	6,924	6,700	6,700	6,900	6,900	6,200
4	940	900	900	975	975	900
5	6,976	6,976	7,400	7,400	7,800	8,300
Totals	15,830	15,176	15,900	16,175	16,575	15,900

ISSUE 12 – SCENERY RESOURCE MANAGEMENT

In addressing this issue, management activities would strive to protect and enhance the scenic and aesthetic values of the National Forest System lands. Management will seek to provide a variety of Landscape Character and meet Scenic Integrity Objectives that are related to the Landscape Character.

Table 2 - 31 shows the comparison of Alternatives based on activities that could affect visual integrity. Table 2 - 32 lists the Prescription Areas with differences in Scenic Integrity Objectives between Alternatives. Prescriptions that do not change with the Alternatives are not shown.

Changes in the environment affect the scenic integrity. As less activity occurs on an area as in Alternative B-1, the landscape character changes from naturally appearing to naturally evolving and the scenic integrity increases. Any change becomes more noticeable as the scenic character moves from rural pastoral/agricultural to naturally evolving and the scenic integrity level goes higher. The Scenic Integrity Objectives are based upon the Desired Future Condition of each Prescription Area.

Table 2 - 31. Scenery and activities that impact visual integrity, displayed by Alternative.

ACTIVITY	Alt. A	Alt. B-1	Alt. C	Alt. C-1	Alt. D	Alt. E-1
Two age harvest 15 BA (acres)[1]	3,000	366	993	1,000	1,000	2,871
Wooded grassland/shrub restoration 15 BA (acres)	0	77	705	705	705	77
Woodland restoration 40 BA (acres)	0	350	1,483	1,483	1,483	361
Uneven age harvest (Acres)	0	108	108	108	108	108
Acres burned (acres)	15,000	2,377	32,900	32,900	32,900	2,377
Total acres affected	18,000	3,277	36,189	36,195	36,196	5,793
Timber Suitable acres	575,458	70,000	347,803	347,803	347,803	373,090
Percent of area affected	3.9%	8.8%	10.2%	10.2%	10.2%	1.6%
Miles of road constructed	35	9	56	56	56	67
Total suitable acres with Very High or High SIO[2]	133,387	671,194	259,616	259,616	259,616	259,363
Possibility of affecting an area with Very High to High SIO	Very little possibility	Most likely	Small possibility	Small possibility	Small possibility	Small possibility

[1]Acres of activity are average annual acres expected in each alternative.

[2] SIO = Scenic Integrity Objective

In Table 2 - 31 the suitable acres represent land that has a Prescription Area where the planned activities will occur. The maximum acres affected are the sum of all the acres of activity. Some activities will occur on the same acres but at different times. The percent of area affected is the maximum percent of suitable acres that could be affected by activity annually.

Table 2 - 32. Scenery by the number of acres for each Scenic Integrity Objective (SIO) by Prescription Area for each Alternative.

Prescription / Layer	SIO*	Alt. A	Alt. B-1	Alt. C	Alt. C-1	Alt. D	Alt. E-1
1.E. Riparian Corridor	H	N/A	135,408	135,408	135,408	135,408	135,408
1.G. Rare Community	H	N/A	1,200	1,200	1,200	1,200	1,200
1.I. Designated Old-Growth	H	N/A	N/A	253	253	253	
	M			7,182	7,182	7,182	325
	L			7,856	7,856	7,856	
1.K. Habitat Diversity Emphasis	H	N/A					
	M			38	38	38	
	L			10,678	10,678	10,678	
			N/A	380,382	380,382	380,382	N/A
1.M. Custodial Areas	VH	N/A	124,370	N/A	N/A	N/A	N/A
	H		277,260				
4. A. Timber Production	H	N/A	N/A	N/A	N/A	N/A	37
	M						10,708
	L						390,885
4. B. General Forest Area (1985 Plan)	H	6,798	N/A	N/A	N/A	N/A	N/A
	M	20,328					
	L	499,379					
Total SIO Acres	VH	22,876	151,472	22,876	22,876	22,876	22,876
	H	110,511	519,722	236,740	236,740	236,740	236,487
	M	26,499	4,771	24,752	24,752	24,752	17,823
	L	519,855	3,777	395,375	395,375	395,375	402,556

* Scenic Integrity Objective codes: VH = Very High H = High M = Moderate L = Low N/A = Not Applicable

ISSUE 13 – ACCESS WITHIN THE FOREST – ROADS AND TRAILS

The DBNF offers a variety of natural resources and recreational opportunities to the public. Access to the Forest via the road and trail systems is essential to fulfill these objectives. On the other hand, too many roads or trails, and inappropriate types, placement or use of roads and trails can limit the Forest's ability to sustain public benefits.

In addressing this issue, management activities would strive to:

- Provide an economically efficient transportation system that provides safe access for all forest users within the capabilities of the land.
- Accelerate the pace of decommissioning unneeded roads (classified and unclassified), and closing unneeded trails (including user developed).
- Provide better quality access by upgrading highly used forest roads and trails, and any roads or trails that are needed but adversely affecting surrounding resource values and conditions.

Table 2 - 33. Projected access by classified road and system trail construction and closure under each Alternative.

ACTIVITY	Alt. A	Alt. B-1	Alt. C	Alt. C-1	Alt. D	Alt. E-1
Miles of New System Roads	20	20	20	20	20	20
Miles of System Road Decommission	0	50	10	15	20	5
Miles of Temporary Roads	65	10	25	25	25	35
Non-OHV trail net increase (miles)	10	0	10	20	35	35
OHV trail net increase (miles)	25	0	25	60	85	85
Trail maintenance (miles)	612	560	612	685	725	725
Trail closure (miles)	35	52	35	7	7	7
Total Trail Miles	612	560	612	685	725	725

Table 2 – 33. Projected miles of road access by maintenance level under each Alternative.

ROAD MILES BY MAINTENANCE LEVEL	Alt. A	Alt. B-1	Alt. C	Alt. C-1	Alt. D	Alt. E-1
Level 5 High (paved)	38	38	38	38	38	38
Level 4 Moderate	171	171	171	171	171	171
Level 3 Minimum for passenger vehicle	242	235	242	242	242	242
Level 2 High clearance vehicles	571	500	565	565	565	571
Level 1 Closed	314	347	315	310	305	314
Total Road Miles	1,341	1,291	1,331	1,326	1,321	1,336

ISSUE 14 – SPECIALLY DESIGNATED AREAS

In addressing this issue, management activities would strive to:

- Provide Wilderness and roadless areas and manage them to protect the unique qualities associated with these areas
- Protect the Outstandingly Remarkable Values of the Forest's designated and proposed Wild and Scenic Rivers
- Protect areas with special geological, paleontological, botanical, zoological, cultural, sacred, or heritage characteristics (Where feasible restored these will be restored.)
- Protect the unique character and values of the Red River Gorge Geological Area and Natural Arch Scenic Area that qualified these areas for their special designation.

Table 2 - 34. Specially Designated Areas and Prescription Areas affected by each Alternative.

ALT.	Designated Areas	Prescription Area
A	Note: Clifty Wilderness added to the Wilderness system during the last planning period. Wolfpen Inventoried Roadless Area adjacent to Clifty Wilderness was recommended to Congress as part of Clifty Wilderness. It was not included. Wilderness, Wild and Scenic Rivers, Red River Gorge Geologic Area, Scenic Area Acres: Current Status	1.A. 2.A, 2.B, 3.C.1, 3.C.2, 3.C.3, 3.C.4, 3.C.5, 3.E, 3.F
B-1	Note: Management is custodial. Special designation requires special management, which was outside the intent of B. B-1 was created to include Wolfpen Roadless Area for consideration as a Wilderness study area. Wilderness, Wild and Scenic Rivers, Red River Gorge Geologic Area, Scenic Area Acres: Current Status plus 2,834 acres in Wolfpen Inventoried Roadless Area Wilderness study area	1.A. 2.A, 2.B, 2.C, , 3.C.1, 3.C.2, 3.C.3, 3.C.4, 3.C.5, 3.E, 3.F
C	Note: Management is for restoration and maintenance of native communities. Special designation may limit the options to restore and maintain native communities. Prescription Areas 1.C, 1.E, 1.G, 1.I. and 1.J were developed to maintain and enhance native communities without further special designation. Wilderness, Wild and Scenic Rivers, Red River Gorge Geologic Area, Scenic Area Acres: Current Status	1.A. 2.A, 2.B, , 3.C.1, 3.C.2, 3.C.3, 3.C.4, 3.C.5, 3.E, 3.F
C-1	Note: Management is for restoration and maintenance of native communities with recreation the second priority. Special designation may limit the options to restore and maintain native communities and provide recreational opportunities. Prescription Areas 1.C, 1.E, 1.G, 1.I and 1.J were developed to maintain and enhance native communities without further special designation. Wilderness, Wild and Scenic Rivers, Red River Gorge Geologic Area, Scenic Area Acres: Current Status	1.A. 2.A, 2.B, 3.C.1, 3.C.2, 3.C.3, 3.C.4, 3.C.5, 3.E, 3.F
D	Note: Management emphasis is recreation with restoration and maintenance of native communities the second priority. Special designation may limit the options to restore and maintain native communities and provide recreational opportunities. Prescription Areas 1.C, 1.E, 1.G, 1.I. and 1.J were developed to maintain and enhance native communities without further special designation. Wilderness, Wild and Scenic Rivers, Red River Gorge Geologic Area, Scenic Area Acres: Current Status	1.A. 2.A, 2.B, 3.C.1, 3.C.2, 3.C.3, 3.C.4, 3.C.5 3.E, 3.F
E-1	Note: Management emphasis is to provide products to the local and regional economy. Special designation may limit the options to provide products to the local and regional economy. Prescription Areas 1.C, 1.E, 1.G, 1.I. and 1.J were developed to maintain and enhance native communities without further special designation. Wilderness, Wild and Scenic Rivers, Red River Gorge Geologic Area, Scenic Area Acres is maintained in Current Status	1.A. 2.A, 2.B, 3.C.1, 3.C.2, 3.C.3, 3.C.4, 3.C.5, 3.E, 3.F

Effects on the Local Economy

The projected economic impacts of the various Alternatives are illustrated below, showing how each Alternative would differ from the current management direction, Alternative A, in the number of private sector jobs they would likely sustain. Such jobs are a secondary effect of Forest Service programs and activities, resulting from the money injected into local economies in the form of salaries, purchases, and payments to counties. From Alternative B-1, which calls for the least human intervention, through Alternative E-1, which emphasizes production of goods and services, indirect support for employment rises along with the increase in management activity.

Each Alternative, with the exception of Alternatives D and E-1, would result in the support of fewer private sector jobs than the current situation, represented by Alternative A. The number of indirect jobs would decrease by 12 percent under Alternative B-1 but would increase by 3.5 percent under Alternative D. Indirect employment would vary from a low of 1,875 for Alternative B-1 to a maximum of 2,207 under Alternative D. Alternative C would decrease job support by about 4 percent while the preferred Alternative, C-1, would decrease it by 0.2 percent. Alternative E-1 would likely increase indirect employment by 0.7 percent.

Recreation and "general" Forest Service expenditures would have the greatest impact on local economies under all Alternatives. The Alternatives that emphasize timber production and Recreation, Alternatives A, D and E-1, would likely have the most salutary effect on job creation.

Table 2 - 35. Average annual employment during the first decade as indirect result of Forest Service programs, displayed by Alternative.

FOREST SERVICE PROGRAM	Alt. A	Alt. B-1	Alt. C	Alt. C-1	Alt. D	Alt. E-1
Recreation	1,439	1,367	1,439	1,511	1,583	1,439
Wildlife and Fish	175	164	175	182	190	175
Grazing	0	0	0	0	0	0
Timber	166	20	87	88	86	180
Minerals	48	48	48	48	48	48
Payments to States/Counties	15	2	8	8	8	16
Forest Service Expenditures	289	273	290	292	291	289
Total	2,132	1,874	2,047	2,129	2,206	2,147
Percent Change from Current	0.0%	-12.1%	-4.0%	-0.015%	3.5%	0.07%

Table 2 - 36. Average annual income, in millions of dollars, during the first decade as an indirect result of Forest Service programs, displayed by Alternative.

FOREST SERVICE PROGRAM	Alt. A	Alt. B-1	Alt. C	Alt. C-1	Alt. D	Alt. E-1
Recreation	$25.9	$24.6	$25.9	$27.2	$28.5	$25.9
Wildlife and Fish	$3.5	$3.3	$3.5	$3.6	$3.8	$3.5
Grazing	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Timber	$3.7	$0.5	$1.9	$2.0	$1.9	$4.0
Minerals	$2.1	$2.1	$2.1	$2.1	$2.1	$2.1
Payments to States/Counties	$0.4	$0.1	$0.2	$0.2	$0.2	$0.5
Forest Service Expenditures	$9.7	$8.0	$9.7	$9.9	$9.7	$9.5
Total Forest Management	$45.3	$38.6	$43.3	$45	$46.2	$45.5
Percent Change from Current	0.0%	-14.8%	-4.4%	-0.06%	2.1%	0.4%

Labor Income by Program by Alternative (Average Annual, Decade 1)

Projected income from indirect employment by Alternative is given in Table 2 - 36. Labor income would range from $38.4 million in Alternative B-1 to $46.2 million under Alternative D. The percentage of change runs from decreases of 15 percent, 4 percent, and 0.8 percent for Alternatives B-1, C and C-1, respectively; to increases of 2.1 percent and 0.4 percent for Alternatives D and E-1, respectively.

Table 2 - 37 and Table 2 - 38 shows how the major sectors of the Daniel Boone's economic impact area are affected in terms of jobs and labor income. For all Alternatives, the sectors most affected by

Forest Service programs and expenditures are manufacturing, retail trade, and services. To the extent that an Alternative changes the timber program, manufacturing receives a corresponding impact. Labor income in the form of wages and proprietors' earnings has a similar effect on the manufacturing, retail trade, and services sectors of the affected area.

Table 2 - 37. Average annual employment, by economic sector, during the first decade as a result of Forest Service activities, displayed by Alternative.

ECONOMIC SECTOR	Alt. A	Alt. B-1	Alt. C	Alt. C-1	Alt. D	Alt. E-1
Agriculture	60	56	59	62	65	60
Mining	44	43	44	45	46	44
Construction	26	21	24	25	26	27
Manufacturing	174	77	124	127	129	183
Transportation, communication, & utilities	55	46	52	54	56	55
Wholesale trade	77	66	73	76	80	77
Retail trade	751	696	744	778	812	752
Finance, insurance, & real estate	37	32	36	37	38	38
Services	658	600	647	676	704	660
Government (Federal, State, & Local)	240	229	236	238	240	241
Miscellaneous	9	8	9	9	10	10
Total	2,132	1,875	2,047	2,129	2,207	2,147
Percent Change from Current	0.0%	-12.1%	-4.0%	-0.2%	3.5%	0.7%

Employment by Major Industry by Alternative (Average Annual, Decade 1)

Table 2 - 38. Average annual income for major industries, in millions of dollars, during the first decade as a result of Forest Service programs, displayed by Alternative.

ECONOMIC SECTOR	Alt. A	Alt. B-1	Alt. C	Alt. C-1	Alt. D	Alt. E-1
Agriculture	$0.9	$0.9	$0.9	$1.0	$1.0	$0.9
Mining	$1.8	$1.8	$1.8	$1.9	$1.9	$1.8
Construction	$0.8	$0.6	$0.7	$0.7	$0.8	$0.8
Manufacturing	$4.4	$2.4	$3.4	$3.5	$3.6	$4.6
Transportation, Communication, & Utilities	$2.2	$1.8	$2.0	$2.1	$2.2	$2.2
Wholesale trade	$2.7	$2.3	$2.5	$2.7	$2.8	$2.7
Retail trade	$11.5	$10.6	$11.4	$11.9	$12.4	$11.5
Finance, Insurance, & Real Estate	$1.0	$0.9	$1.0	$1.0	$1.0	$1.0
Services	$10.9	$9.7	$10.6	$11.1	$11.5	$11.0
Government (Federal, State, & Local)	$9.0	$7.3	$8.8	$9.0	$9.0	$8.8
Miscellaneous	$0.1	$0.1	$0.1	$0.1	$0.1	$0.1
Total Forest Management	$45.3	$38.4	$43.2	$45	$46.3	$45.5
Percent Change from Current	0.0%	-15.2%	-4.6%	-0.06%	2.2%	0.4%

Labor Income by Major Industry by Alternative (Average Annual, Decade 1; $1,000,000)

Forest Service revenue, a portion of which is directed to states/counties, would be expected to decrease only under Alternative B-1. The level of payments to counties expected in the first decade is shown in Table 2 - 39. From $1.1 million currently, Alternative B-1 would to show a $0.5 million payment; Alternatives C, C-1 and D a $1.5 million payment; and Alternative E-1 a $1.9 million payment to the counties within the Daniel Boone proclamation boundary.

Table 2 - 39. Forest Service revenues and payments to counties by program.

FOREST SERVICE PROGRAM[1]	Alt. A	Alt. B-1	Alt. C	Alt. C-1	Alt. D	Alt. E-1
Recreation	$0.1	$0.1	$0.1	$0.1	$0.1	$0.1
Wildlife and Fish	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Grazing	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Timber	$2.9	$0.4	$1.5	$1.5	$1.5	$3.2
Minerals	$1.4	$1.4	$4.4	$4.4	$4.4	$4.4
Soil, Water & Air	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Protection	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Total Revenues	$4.4	$1.9	$6.0	$6.0	$6.0	$7.7
Payment to States/Counties	$1.1	$0.5	$1.5	$1.5	$1.5	$1.9

[1]In millions of dollars.

Finally, Table 2 - 40 illustrates the contribution of the Daniel Boone's current management program to local economies. Forest activity generates one percent of the area's jobs and 0.9 percent of the labor income. Manufacturing, retail trade, services, and government benefit most from the Forest's economic impact.

Table 2 - 40. Current role of Forest Service related contributions to the area economy.

	Employment (number of jobs)		Labor Income ($ million)	
ECONOMIC SECTOR	Area Totals	FS-Related	Area Totals	FS-Related
Agriculture	15,721	60	$138.8	$0.9
Mining	4,965	44	$274.7	$1.8
Construction	12,843	26	$330.1	$0.8
Manufacturing	32,140	174	$1,013.7	$4.4
Transport, communication, utilities	9,456	55	$346.8	$2.2
Wholesale trade	6,925	77	$212.7	$2.7
Retail trade	37,085	751	$561.4	$11.5
Finance, insurance, & real estate	7,140	37	$166.8	$1.0
Services	44,393	658	$1,077.3	$10.9
Government (Federal, State, & Local)	30,329	240	$892.2	$9.0
Miscellaneous	2,115	9	$15.0	$0.1
Total	203,112	2,131	$5,029.5	$45.3
Percent of Total	100.0%	1.0%	100.0%	0.09%

FOREST SERVICE-RELATED CONTRIBUTIONS TO AREA ECONOMY

Commodity-oriented Alternatives tend to produce greater economic impacts. If timber production on the Forest declines, local demand could still be met by increased harvest on privately owned lands. If so, there would likely be little or no loss of jobs or income from a reduced federal timber program. This adjustment may not be sustainable due to the larger area harvested on private lands in the short term. If that substitution does not occur, the loss of jobs and income would reduce the strength and diversity of the local economy immediately.

Recreation also plays a significant role in the Forest's contribution to local economies. Under Alternative B-1, which would result in the lowest level of commodity production, recreation would account for 73 percent of the jobs and 64 percent of the labor income indirectly sustained by Forest

activities. Over half of the projected labor income would thus be concentrated in only one segment of the economy. In contrast, even in Alternative E-1, which would place the greatest emphasis on commodity projection, 67 percent of total jobs and 57 percent of total labor income resulting from Forest activities would still be derived from recreation.

FOREST AND RANGELAND RENEWABLE RESOURCES PLANNING ACT

NFMA regulations at 36 CFR 219.12(f)(6) require that at least one Alternative be developed that responds to and incorporates the Forest and Rangeland Resources Planning Act (RPA) Program's tentative resource objectives for each forest. The current Forest Service Strategic Plan fulfills the RPA program purpose. The RPA assessment provides information and focus for the general strategic Goals and Objectives in the Forest Service Strategic Plan. The Strategic Plan (2000 Revision) contains the following Goals that are consistent with all of the Alternatives presented in this EIS:

Goal 1: Ecosystem Health: Promote ecosystem health and conservation using a collaborative approach to sustain the Nation's forests, grasslands, and watersheds.

Goal 2: Multiple Benefits to People: Provide a variety of uses, values, products, and services for present and future generations by managing within the capability of sustainable ecosystems.

Goal 3: Scientific and Technical Assistance: Develop and use the best scientific information available to deliver technical and community assistance and to support ecological, economic, and social sustainability.

Goal 4: Effective Public Service: Ensure the acquisition and use of an appropriate corporate infrastructure to enable the efficient delivery of a variety of uses.